

A Distributor Publication

ATARI USER

Vol. 2 No. 2

June 1988

£1

*Inside
this
issue*



*Start of
a great
new series*

**Teach your Atari how to link up
with the real world outside...**



DIY maze construction set

Sprite designing made easy

**Create micro
magic – in
just 5 lines**



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Published by
Overseas Publications Ltd.
Europa House, 68 Chester Road,
Maidstone, Kent ME1 5NQ

After their evaluation program findings and to allow his participation. Material should be typed on computer-printed and preferably double-spaced. Program findings should be accompanied by concrete steps to take. Please include a program and educational strategy otherwise the return of material cannot be guaranteed. Contributions accepted for publication by Sagebrush Publications Ltd will be for use only unless noted.

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Abstract



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Kev Bulmer concludes his short series on art on the ST with a look at artistic style and techniques.

19 More memory

Two completely different approaches to the same problem - how to give your 620ST a massive 1024k memory.

22 Advice

Andrew Bennett gives you more hints and tips on the ST, and answers some of your queries.



Art and the ST

BEING developed by Andreanna Software for release by Microsoft next month is *ST Art*. This paint program will handle both graphics and text (produced in dot printout for instant letters) and offer a radical display facility with simple commands.

It will be compatible with the ST version of Microsoft's general publishing package *Page Street Writer*, due to be launched in September.

As proof has been set for this latter package, but it is likely that two variations will be published — a full-blown professional program and a cut-down version for the home, education and small business market.

Also promised by Microsoft for the ST are *Strike Force Harrier* and *Signal 42* for flight simulation fans.

Accounts suite

A SUITE of integrated accounting software for the Atari ST range has been released by Systematica International Electronics.

The range includes General Ledger and Financial Planning, Sales Ledger, Purchase Ledger, Invoicing, Stock Control, Payroll and Job Costing.

Prices range from £250 to £450.

EXIT THE 520ST PACKAGE

THE 520ST-based computer package that spearheaded the rebirth of Atari under Jack Tramiel has been planned.

Having served its purpose of achieving a foothold in the UK vintage user market, the original 1740 configuration of monitor, external disc drive and mouse has been overtaken by the new breed of Atari technology.

This includes the 520STX, 1040STX and the much-to-be-wished 520STFE.

Since the basic 520ST would be of little use without its main monitor, the 520STFE includes a modulator which allows connection to a domestic television set.

The £399.99 520STFE will still run with either a monochrome or an RGB colour monitor and can be connected to a composite colour monitor such as a TV with a video input socket.

Although the operating system — TOS/GEOS — is now provided in ROM, you must now buy an external disc drive to actually do anything with the machine — unless you want to wait for the next cartridge-based software to be released.

Along a 500k drive, originally supplied with the 520ST, costs £149.99 and the 1mbyte ver-



Making way for new breed

sion £199.99. Alternatively, Southern-based AST has produced an ST compatible 1mbyte drive for the surprisingly low price of £99.

There is still no information as to when the 520STFE with built-in disc drive will be available, although a price of

£399.99 has been announced.

For those who still want to buy a bundled machine at an all-in price, Atari's 1mbyte monitor with a built-in 1mbyte drive — the 1040STX — is available with a monochrome monitor at £799 or with an RGB colour monitor at £999.

ATARIS IN YOUTH TRAINING DRIVE

THE proceeds of a lost property sale by youth club helped buy Atari machines for a youth club project.

One of the computers on Atari 1300X was taken from the Honor Oak Youth Club, Lewisham, and used for demonstrations at a national conference on computer work in the Youth Service abroad the Royal Princess on the Thames.

The club's senior youth worker Mike Parham said: "We have four Atari — two 1300Xs, a 1300Lx and a 520ST with disc drive — all bought by donations from friends of the club. Inter-Acton — an educational charity — and local



Atari is used at the conference.

points after their lost property sale.

The conference stayed to show how youth clubs now need computers to train youngsters ready for the new age of technology. I think

within the next five years, none will even be able to get a job making shavers unless they can use a computer.

Atari has already funded the buying of machines for youth clubs and in the past also donated

100 800Ks for use at some many camps.

The company also donated two 1300Lx to Inter-Acton and Community Computers UK, who help link organisations to potential donors.

The Atari are helping themselves. Britain's youth clubs are job springboards, according to Ed Bremer, founder of Inter-Acton, an educational non-profit making charity which also does aid organisations.

■ The Department of Education and Science has just announced a £75,000 grant over the next three years to Inter-Acton for their youth club computer projects.



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Abstract

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BIG BOOST FOR ATARI SOFTWARE

FOLLOWING major deals with two top independent software houses a new wave of Atari ST adventure games is now in the pipeline.

The recently-released *The Pawn* is one of seven disc-based adventures to be written for the Atari ST over the coming year.

Level 9 Computing has also signed an agreement to provide three disc-based products for the Atari ST over the coming year.

After meeting program editors from the two computer publishers Tony Reinhold said: "Part of the Reinhold expansion will involve recruiting the best very talented independent American software, to which we have already made a considerable investment on the American market with British games and utilities."

Magnetic Scrolls' commitment will give Reinhold solid marketing rights for a further six new games after *The Pawn* starting with *The Guild of Thieves*. Available in the autumn, all programs will be disc-based and fit in versions



Left: former "running" distribution.

At the Reinhold managing director of Magnetic Scrolls said: "This agreement with Reinhold enables us to continue our research into natural language and other artificial intelligence-related products."

Level 9's deal was signed by Peter Austin, one of the partners in the brothers-and-sister company. He said: "We expect a substantial increase in adventure playing and Reinhold is prepared to support our products in a big way."

Reinhold will initially market Level 9's adventure *Colossal* strategy - *Colossal Adventure*.

Dungeon Adventure and *Adventure Quest* - as a disc at £19.95 for the Atari ST and a triple cassette at £19.95 for the 8-bit machines.

A second multi-disc adventure, provisionally called *Knight One*, is due out in September with a third, probably a three-discable package, following two months later.

Picture shows Reinhold's adventure team left to right the Level 9 brothers-and-sister team of Mike, Peter, Nick and Margaret Austin. Mike Clark, Tony Reinhold and Paula Byrne of the Reinhold Software, and Ben Gordon and Anita Stander of Magnetic Scrolls.

Tips for authors

GAUSS publisher Superior Software is looking for people with new ideas for programs for the Atari range.

The firm is offering a free guidebook *Top Tips for Games Authors*, which contains general advice about selecting suitable software publishers and writing games software.

Sales manager Ken Campbell says: "The rewards for games authors can be enormous."

Tom Tyler, one of our authors who is only 13, has earned more than £26,000 in royalties over the past year and that figure is still increasing week by week.

ATARI'S ST PRINTER

ATARI has launched the first of its own range of printers for its ST computers.

The SM58504 dot matrix 80 column printer introduces a new line of high speed printers that will be of integrated design to complement the 16 bit ST range.

Rob Harding, Atari UK's marketing manager said: "It is our intention to become the major supplier of all kinds of printers including the desktop, dot matrix and laser models during the next 12 to 18 months."

They will all be priced at affordable levels in order to sell in substantial volumes.

The SM58504 costs £199.

Single handed joystick

TWO new joysticks for the Atari games machines have been launched by Titan Electronics.

The Fantastic III has a red wire dual analogue the best joystick for both left and right handed players.

It also has eight directional movement with six-axis control and a sensitive control and pressure with a two metre cord. Price £9.95.

The Quicksort II Plus has microswitches with auto-fire capability and two fire buttons so users can shoot with thumb and trigger finger. The machine can be locked to allow a continuous burst of bullets.

Single handed video game play is possible with the Quicksort II Plus as a result of the built-in auto-fire. It costs £13.95.



A NEW version of CashLink Accounts has been produced by CashLink for the Atari 520ST.

The program designed for small to medium sized businesses, takes advantage of windows and pull-down menus.

It offers a complete accounts department handling all credit accounts and cash sales with full accounting journals and

ACCOUNTS ON MENU

records of stock.

CashLink Accounts costs £295. A full accounting package with Atari 800ST also does monthly printer and accounts program is offered at £1,190.

Budget Gold

A GAME that cost almost £30 when it was first imported from the USA is now on sale for just £2.99 for the Atari 8-bit machines.

Shamus, an all action adventure is one of four bargain priced arcade games from America now being sold under license by US Gold in Britain.

The American series also includes New York City where dangerous tasks are performed, Landmarks, another multi-level three dimensional game, and Omega Police with 16 screens of action-packed challenge.

All cost £2.99, and are available on cassette only.

Inside the ST

THREE new books for the Atari ST user come from First Publishing.

The Anatomy of the Atari ST includes detailed descriptions of the special and graphic chips, internal hardware and a fully documented BIOS assembly listing.

Gem on the Atari ST gives information on the Gem operating system in easy-to-follow language.

Atari ST Tricks and Tips explores basic commands to access Gem using WORDSYS and GEMSYS, and describes resource files with examples.

Each book costs £12.95

Bugs menace

GRIM warfare in the theme of Pepsico's Atari 8-bit release, the Game! Game. It comprises three phases in which there is just one chance to save the world from germ bugs that infect a toxic waste filling a Coast.

The aim is to hit enough of the germ bugs to stop a colony reproducing, and retreating to the earth's surface. Price £7.99.



ATARI WILL BID FOR NAVY CONTRACT

ATARI will be competing when tenders are invited by the Royal Navy to supply standard software for fleet training classrooms for its junior officers and young sailors.

Britain has had to double the number of sailors in sea-going jobs, cutting the time spent in educational training courses.

Senior warships have a variety of computers brought from ships to look for study and recreation, as well as the officially certified computers needed for analysis of performance of missile guns and other weapons.

But the Royal Navy wants a standard machine capable of helping sailors basic education in mathematics, English and other subjects, as well as

professional courses previously taught ashore.

The idea is that by providing a standard computer a step by step teaching system can be worked out so sailors can learn either computerised operational work or CSE and GCSE subjects at their own pace and be able to go back over parts they do not understand.

A Ministry of Defence spokesman told Atari User: "It is the intention to purchase a standard computer for all our ships for the education situation and junior officers about that what type of computer will be installed will of course depend on the complicated price of the tenders."

The Royal Navy at present has 26 submarines, three air-

craft carriers, 14 destroyers, four fleet tender training ships, six sea patrol vessels, eight survey ships, and a number of frigates which would all need computers - the larger vessels requiring many additional machines.

Rob Harding, marketing director of Atari, said: "We are very interested to hear about this opportunity to provide computers for the Royal Navy."

The ST range offers considerable value both in price and performance and is also very flexible.

The ST is proving very popular at all levels of education and should use them perfectly.

A number of educational packages will be ready for the ST in the near future.



Part of Textline's new offerings

Business is booming

MORE than 1400 000 have been marketed by distributor Textline Computers to improve the services for Atari users.

Over the last three years business boomed so much at the West London shop - just 3.99 so far - the company was forced to move to larger premises.

In two months the two buildings covering 7 000 sq ft in Epsom have been converted into a well-stocked warehouse and entrance showroom.

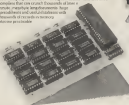
Ray Ditch, managing director, said: "The Atari ST range brought about increased sales."

Upgrade the 520 ST to one megabyte and add the professional look from under £100!

NEWBY CARDS

The ART 285 MEMORY CARD upgrade, manufactured in the U.S.A., is a 100% compatible RAM card, and can hold up to 100 programs of 1000 bytes each. The ART 285 gives you faster access to the RAM in the ART 285, and HALF MEGABYTES for less than \$999.00 (see below).

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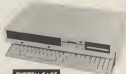
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14. *Journal of the American Statistical Association*, 93(463):1303-1310, 1998.

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¹ *Journal of the American Medical Association*, 281: 2369-2372, 1999.

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	College	~65
	Graduate	~75
50-69	High School	~65
	College	~75
	Graduate	~85
70+	High School	~75
	College	~85
	Graduate	~95

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MAST: Mathematics and Science and Tax Management

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Figure 1

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American Scene

EDWARD SHARK reports

NEW York, New York, so good they named it twice! This is a definable fact for those who have spent any time there, but one good thing to come from the Big Apple software is one of the most professional of the software houses currently writing for the ST.

Two products have emerged from this company — Henry's Fundamental Basic and Fast/Basic M. The former is an introductory language which can be used by first-time users through to advanced Basic programmers.

The package contains a whole host of built-in features but more importantly it is apparently compatible with the second package.



Fast/Basic M is Microsoft MBasic compatible, which means that programs can be transported from other micros. The two packages represent a strong competitor to the current Atari ST Basic and the price will not break the bank. Henry's Basic will retail for £39.95 and Fast/Basic M for £39.

Prison also plan three more titles to add to the ST library — Fast/C priced at £125 and Fast/Veritas and Fast/Cobol at £249.

The graphics aspect of the ST is an exciting area for many people. The sheer resolution of the ST graphics handling makes the machine a must for creative people. Degas was the first to illustrate the power of the machine's graphic capabilities and we are now starting to see more graphic packages arrive on the scene. Alden Software has produced three one of which, Typewriter, claims to be the perfect tool for layout and design. I found it interesting in as much as you can load Degas pictures into the program and reduce or enlarge them and add text. An £39.95 is represents a good utility to use alongside Degas.

Moving on to the real professional programs we find Fast/Draw from McGraph which is truly excellent; if you have ever had the good fortune to see Sam Graw this package will attract you.

You can create floor plans, landscape design, architectural designs or simply draw pretty pictures. The printed results are very good, with the ability to print either a landscape picture or a portrait.

Apart from owning a 13081 and a 5208T I also admit to an IBM XT. Until recently the IBM was very useful because, in the course of my working week, I need a very powerful relational database. Orbase II did the job admirably — until I received a package from a company called Holmes and Greshworth.

H & G Base is basically Orbase II, but for the £22/10408T. You can even run Orbase II files created on another machine without any alterations. It retails for £59.95 and should turn out to be the software package of the year for the serious business user.

For the 8-bit Atari, Origin Systems has at last released the long-awaited sequel to Ultima II. Not surprisingly it is called Ultima IV. The game claims to be 16 times larger than its predecessor and takes up four disc sides.



Inside the packaging you will find the discs, a book on the history of the Kingdom of Britannia, another on the Mystic Wisdom of the game and a very informative players reference guide. The most touch to the whole package is the map which is printed in full colour on cloth and looks rather nice on my wall. It will doubtless be available within the next few months from US Gold, but do not expect all the refinements that come with the US version.

The American Civil War is the topic of 551's latest contribution to the world of the strategy. Battle of Antietam for the 8-bit Atari is set in Maryland on the day the battle took place between Robert E. Lee and his army of North Virginia and the army of the Potomac led by General George McClellan. The simulation is up to the usual 551 standards and

needs for £39.95.

If you read last month's column you might remember a company I told you about called Hippopotamus. Well, I have received another Hippo package for the ST called HippoConcept which is an outline and idea processor.

Imagine you are preparing notes on a subject but do not have the time to elaborate on those notes at the time you record them. When you come back to them, the program will allow you to elaborate and format them into an orderly manner adding deleting and editing as necessary.



It is difficult to explain the full working details of the program in a few words but for the person who likes to just let his or her ideas down on the spur of the moment, and make sense of them at a later date, the package will certainly help.

When it comes to excite games and the like my interest begins to fall. On the other hand, I do enjoy a game where you are not tied down to speed and joystick ability. Word for Word is for me. Copyright and trademarks protect the authors. Say View Software, here calling city the name I do and that is SanDiego.

Two is possibly the best version of the famous board game produced for any computer. I don't need to say much more, apart from the fact that when used on the ST the mouse is invaluable. The price of the game in the UK will be £39.95.

I have just finished reading the American magazine *Avion* and *Analog* and I am pleased to say that the products reviewed in their latest issues are ones that *Atari User* covered some time ago.

It is nice to find that a British magazine is more up to date on American products than the Americans themselves, and you can read *Atari User* for a third of the cost of our American cousins.

Until the next time.

Classy classic

Program: The Tail of the Lion
Price: £9.95 (includes)
 £14.95 US\$2
Developer: Danbury Software
 Sales: Puma Software
 Email: danbury@puma.com
 Tel: 01-462 1280

DESIGNED to reveal the 'The Tail of the Lion' game, this is the first time since the original version of the game that a classic version of the game has been released. The game is a classic of the genre, and is a classic of the genre, and is a classic of the genre.

Secondly, the game consists of flying a fighter spacecraft through a series of obstacles. The background is a series of two-dimensional cross-sectional maps. Your view is from the side.

The spacecraft flies from left to right through the obstacles, but can accelerate or decelerate and can move up and down. The game is a classic of the genre, and is a classic of the genre, and is a classic of the genre.

The third system is a classic of the genre, and is a classic of the genre, and is a classic of the genre. The game is a classic of the genre, and is a classic of the genre, and is a classic of the genre.

If you lose one of your lives by crashing into something solid or getting shot down, you

continue from the particular sector and sub-sector where the disaster occurred. You can all of your lives, though, and you can right back at the beginning of the complex again.

Each sector gets progressively harder with the same level of difficulty, and the same level of difficulty. The game is a classic of the genre, and is a classic of the genre, and is a classic of the genre.

The defense systems consist of many main elements. Firstly, there are obstacles which block your way but don't get out of their way to reach your ship.

These consist of such things as generators, scanners, antennas and radar air batteries.

Secondly, there are the various weapons, some of which are more powerful than others, and some are more powerful than others. The game is a classic of the genre, and is a classic of the genre, and is a classic of the genre.

Particularly nasty are the various weapons, some of which are more powerful than others, and some are more powerful than others. The game is a classic of the genre, and is a classic of the genre, and is a classic of the genre.

Your sole means of defense is a single ship, which is a classic of the genre, and is a classic of the genre, and is a classic of the genre.



cannot which is used to kill any obstacles and enemies that are destructible - and not all are.

If you are skilled enough to reach them, there are only enemies and the alien power generators within the complex. Your mission is to destroy these generators.

The game slows up to four players and has six skill levels. Level 1 being tough and 6 being easiest. To test and measure the accuracy of the attack and defense.

You may choose to have five or seven spacecrafts at your disposal.

One unusual feature is that the moves and the controls appear to be randomly generated during play, so the game is different each time you start up your spacecraft.

The drawback is that there is no way you can map the area beyond the main

overall victory that much more difficult.

Not an original game by any means, and I missed the ability to bomb as well as shoot, but other versions have included. Even so, this is the best I've seen of the game.

Presentation, graphics, sound effects and music are all good quality, and with its random generator and range of options, the game should prove to be classic.

The Tail of the Lion is an exciting and challenging game that is up there with the best of the genre. It is a classic of the genre, and is a classic of the genre, and is a classic of the genre.

Bob Chappell

Sound	9
Graphics	9
Playability	9
Value for money	9
Overall	9

A seat on the managers' bench

Program: Football Manager
Price: £9.95
Supplier: Addictive Games
 Sales: Addictive Games
 Tel: 012 462 1280

Anytime you've passed your time here is to manage a club of your choice. The job ahead is to take your club from the fourth division to the first and possibly win the FA Cup on the way.

This is by no means a simple task. You have to manage a club of your choice. The job ahead is to take your club from the fourth division to the first and possibly win the FA Cup on the way.

hundreds of thousands of the best.

The first thing you do is select one of the several British Football Association league sides. Most you select a club level ranging from beginner to genius. All changes are made via the keyboard so be prepared for lots of typing.

Then on to the main screen where you sell or let your players, arrange a loan or perhaps pay one back. Loans can range from £50,000 for a fourth division team to £1,000,000 if you make it to the top.

Before every match you select your team & select

evaluation of a player's morale, energy and skill will be needed if you want to succeed.

After every match you are given your share of the game results and shown the results of the other games played in your division, thus allowing a league table to be calculated.

Fourteen months later you are marked for your end of season league placement. If you are promoted you can look forward to the start of a new season.

Football Manager is a fun game with only three faults. It is available on Amiga, so play is rather slow. There are no graphics, and it is only

available on cassette. This is a shame as so many Amiga owners have had their own software houses should take note.

On the positive side, there is a save game feature which means that you don't have to start from scratch every time you load.

Football Manager is a good game in which you can really get involved.

Ped Irvine

Sound	8/10
Graphics	8/10
Playability	9
Value for money	9
Overall	9

Cavern capers

Program *Blindfold*
Price £1.95 (suggested)
 £14.95 (box)
Distributor *Software 242*
 Group Inc (first edition)
 MACOS RUN for 65,285
 1217

BLINDFOLD is a well-written arcade game where you have to pilot a helicopter through underground enemy installations in search of kidnapped hostages.

As my helicopter appeared on the left-of-past the screen filled with laser beams, greys bombs and various large buildings and caverns.

I took off and the screen scrolled from right to left revealing even more traps and

missile breaking beams and more.

Reaching the other end of the cavern after what seemed a nerve-shattering eternity I landed on the pad. Suddenly this turned to an upper time-off point and I had to fly back to the starting point while avoiding new obstacles.

Eventually I completed the first level and progressed to a more difficult cavern with stronger defenses.

You can replenish your ever-diminishing fuel supply by bombing fuel pods.

There are five caverns and the fuel pods become harder and harder to hit. If you manage to complete the fifth cavern there is quite a surprise in store, but I will leave that for



you to decide for yourselves.

Blindfold is great fun to play because it holds your attention something that is missing from a lot of software nowadays. I found it easy to become playing after game to get on to the next cavern.

The program also offers a

score editor which allows you to change your own scores saving them to disk or tape.

Paul Irvine

Sound	7
Graphics	80
Playability	80
Value for money	80
Overall	80

Danger, addictive

Program *Boulderdash II*
Price £3.95 (suggested)
 £14.95 (box)
Distributor *Software 242*
 Group Inc (first edition)
 MACOS RUN for 65,285
 1217

If you've a taste for games that leave you red-eyed and stiff-fingered, that have you trying to the final conclusion time. I'll just have one more go. That must such an incredible grip that you lose track of time, then final, definitely it is just your cup of madness.

The predecessor *Boulderdash* was one of the most enjoyable addictive games ever released a computer doesn't miss. The follow-up although it is pretty much the same mistake as before is more bit as daring.

You control a cute little figure called Rockford who bounces and taps his feet constantly if you leave the side. Rockford's task is to travel sideways through a series of two-dimensional caverns and collect as many jewels as he can.

Now while the plot may

strike you as perhaps lacking in the originality department and although the graphics while pleasant are nothing to gush about, the game has one ingredient that sets the whole thing alight and starts the old adrenaline pumping. In a word: boulder.

Large boulders embedded in various parts of the cavern are scattered liberally through out the cave system. What makes the game so much fun is that the boulders are prone to come crashing down with a noise like thunder.

If Rockford is in the path of a falling boulder and doesn't shift immediately of the way he gets squashed and loss of his three lives.

The boulders drop preferentially. They will either fall straight down if unsupported or topple off a destabilizing aspect if there's nothing else to hold them in place.

This I soon master the laws of physics in *Boulderdash* but there still remains the need to adopt a careful strategy if you're to succeed.

As well as the boulders moving, butterflies, snakes, fireflies and other obstacles



and obstacles are so it that you're kept on your toes.

You control Rockford's movements with minimal joystick manipulation. He leaves a trail behind him as he goes and automatically collects any jewels he passes over.

When a certain number of jewels have been gathered a secret exit appears giving Rockford the chance to move on to the next level.

There are 16 new caverns to traverse each of which consists of several walking areas and has its own unique layout and set of problems.

To increase the playing life of the game, each cavern has five successive difficulty levels the greater the difficulty level the more jewels you have to

collect and the less time you have to do it in.

In addition there are four non-obligatory time missions to solve giving you the chance to earn valuable bonus points.

The program also thoughtfully provides the option of starting at Caves A, B, C or D so you can get to see a lot of the game from the word go.

The Rockford exploits are endless - great fun and wonderfully addictive. Because unplayed - go buy *Boulderdash II*.

Rob Chappell

Sound	8
Graphics	8
Playability	80
Value for money	80
Overall	80

Wearing well ...

Proprietor: Atlantic Computer
Price: £9.99 (suggested)
£14.99 (list)
Supplier: (05) 5441 Parkway
 Industrial Estate, Haslemere,
 Surrey, GU27 3AB, Surrey
 Tel: 017 348 3000

GAMES, computerists seem to be on all the rage at the moment. Across Canada it is a collection of five fairly different Atari games bundled together on a single cassette or disc - Polo Position. Features: Mr. Q's and Dig-Dog.

At least three were originally released on BGM cartridges. Furthermore, has joined to cartridges is no big sophisticated collection, this is a strong sort of nostalgia. Nothing wrong with that, especially if the games are still fun to play.

Polo Position is still one of the best online racing games around and is a must for any Atari owner. The game gives you the chance to drive a steering on at her racing speed around one of three different race tracks, competing against other computer-controlled cars.

To enter a race properly, you

first have to complete a qualifying race within a time limit. How fast you qualify determines your position on the starting grid in the subsequent race.

Options include entering the course and number of laps, and having a practice race without other cars getting in your way.

Because that part of the relay instructions which tell you how to control the car - it is missing. For the record, the car accelerates automatically. Joystick forward on the left is you into high gear, backward on the left while left and right move the car in that direction. To finish, press the fire button.

An exhilarating game - fast movement, good use of speed and graphics and will one of my personal favourites.

Polo Position must surely be familiar to everyone. You control the famous yellow car, stepping forward and about around a single track, dodging up and down, dodging passing ghosts.

Special energy dots which allow you to turn the tables on the ghosts and the inclusion of several difficulty levels add to



the fun.

A simple game by current standards, yet still powerful addictive. One of the few arcade conventions worthy of the title classic.

Mr. Q! with a 10 minute head time from cassette, consistently refused to boot up successfully. Let's hope that it was just my rotten copy, at least otherwise there could be a lot of frustrated buyers.

From memory, the game itself could almost be described as a poor combination of Polo Position and Boulder Dash. You tunnel around a field dodging for charms, eating pudding, bangers and so on while avoiding game killing snakes and leeches off monsters with your Powerball.

It will not have escaped

your notice that when it comes to computer game plots, reality and logic immediately take a back seat.

Dig-Dog was fairly popular in its time but the convenience of a golden slide rule to guide it is similar to but nowhere near as good as Mr. Q! It is graphically crude, lacks variety of challenge and none of it plays slowly.

Dig-Dog compared badly with today's standard of interest. The real head up getting well though.

Rob Chappell

Sound	5
Graphics	7
Playability	8
Value for money	8
Overall	7

Desperate drive

Proprietor: The last 10
Price: £2.99
Supplier: Massachusetts M&M
 Range 1110 Post Office,
 London EC2A 4UN, UK
 Tel: 01 271 4880

THE Last 10 is one of the first budget games to appear for the Atari computer and is a very interesting release too.

During the first 10 minutes you have played hidden in your house developing a Super Car - the 10. Move in a desperate attempt to reach the certain day of freedom, you come out into the open only to discover that there is an unexpected super bomb with only minutes left before it detonates.

So you must drive to your base in the short time remaining - but will you make it?

If you think this might be difficult, you will find the game even more so. It will be much that you have a very short time in which to return to base, but more a matter of controlling the 10.

Instead of a straightforward up, down, left and right to control the car you have left, right, forward, backward and diagonals.

It is very easy to shut off the road at any speed, but when the controls that you have to travel in order to reach the base in time.

To add to your troubles you have a limited amount of fuel and your radiator shield gets progressively weaker.

On the positive side the graphics are excellent and the sound is very smooth.

The screen is divided into



two: the top half shows a bird's-eye view of your car and its position along the road and the bottom half shows your dash-board.

An ever present onboard computer tells you how far it is to the base and how much time remains before the bomb goes off.

The Last 10 is a good game

which lets itself down because it is extremely difficult to play. But at the same price it is certainly a worthwhile challenge.

Ben Holligan

Sound	8
Graphics	9
Playability	6
Value for money	8
Overall	7

Making your own mazes

THIS program was written for those of you who liked my Cavern Escape in last month's *4-Jan/March*. The problem with that game is that as soon as you have explored the mass of rooms, drawn a map and completed the game, much of the enjoyment has been removed.

With Maze Creator you can now make a new maze using the same elements as in the original game. Conversely if the game is too difficult you can make the game easier to complete.

Firstly I will explain how the maze is made up. There are four basic room layouts built into the program. These are arranged in a 10 by 10 square with variable connections between them. They are numbered from 0 to 99, starting in the top left corner running in horizontal rows.

The start is always 0 and the end is always at 99. These cannot be altered easily. The data for the exits of the rooms, the type of room, its name and the difficulty factor are all stored in data statements in lines 2000 to 3000. The key and lock rooms are defined in lines 1100 to 1180.

The maze creator program will allow easy design of a new maze and automatically create a file which will merge and replace these lines in Cavern Escape.

The program is simply used and largely self-explanatory. After it is run, the screen will blank for a few seconds to read in a new character set. It will then create the current maze on the screen. The key rooms are in blue and the lock rooms are in red.

All the connections between the rooms are shown. The program will



MIKE ROWE tells how to enhance Cavern Escape

then ask if you are happy with the lock and key rooms as they are. Enter Y if you are or N if you want different rooms.

If you want to alter these rooms you will be asked for a new location for each key and lock in turn. You must enter the number corresponding with new room from 1 to 99 — do not use 00 as this is the end.

After all the locks and keys are placed a flashing cursor will appear on the map. Use joystick 1 to move this to the first square to be edited and press the button. The room type will then be displayed in the text area of the screen.

You can cycle through the four types available using the joystick. When you have the type you require

displayed press the button to store it. Next the difficulty level is displayed. Again after this with the joystick and press the button.

Only rooms 3 and 4 are affected and the higher the number the greater the difficulty. After this the room being edited is placed to the right of the map with the exits displayed. Cycle through the various combinations of exits until the desired one is found using the joystick and then press the button.

After this you are asked to type in the room title. If you just press return the standard name for that type of room will be used. This will then bring back the flashing cursor and you are ready to edit the next square. If you have finished editing just press Start. This brings up a prompt for a filename to save the data to.

If you are using a printer enter C. If disc type differentiate for example MAZE.DAT. This will produce a listed file of the necessary lines of data to alter the original program.

When this is completed load in the

Player designer takes the tedium out of plotting all those pixels

Part Two of **STEPHEN WILLIAMSON's** series on player missile graphics



We already know that a player is a shape formed by pixels plotted within a player stripe. The normal method of designing a player is to draw the shape on graph paper and work out the data that is used by the player missile system to define that shape.

To do this requires a little knowledge of binary maths. Stripped down to its bare essentials, a computer is not very intelligent. Its heart is an area which recognises whether a switch is turned off or on. In the case of the Atari there are eight switches or gates through which a small electrical current can pass.

In the binary system of a parent is present this is represented by the number 1, and if there is no parent 0 is used. Because the Atari works on an eight gate system it is called an 8 bit machine. Its big brother the Atari ST uses a 16 bit system which is more powerful.

When we design a player we have to work in a similar way. The width of the player stripe is eight pixels, and within any row pixels can either be turned on (1) or turned off (0).

Figure 1 is a diagram of the bug encountered in last month's program. The shape occupies 11 rows within the player stripe. Each empty square in the diagram represents a section of the stripe where no pixel has been plotted with the filled squares

representing the plotted pixels that make up the bug shape. In each row of eight pixels there are various combinations of pixels that are either switched on or switched off. Figure 1 also shows the binary representation of the shape.

Although the Atari works at the binary level it will not directly accept binary input. In the early days of the first mainframe computers programmers wrote their programs in the binary system.

But it was soon evident that the human mind, unlike computers, finds writing programs as a series of 0s and 1s very tedious and the chances of making errors are high. Hence the need for computer languages — machine code, Pascal, C, and so on.

Having designed the player using a binary-type system we have to convert all those 0s and 1s into something that the Atari can understand. This is done by a process known as bit-mapping. In each row of the design, the combination of pixels that are off or on can be represented by a single number.

To do this each pixel space within a row is assigned a numerical value. Starting from the last column on the right, the first position is assigned a value of 1, the next column to the left 2 (double 1), the next column 4 (double 2) and so on until the left

hand column becomes 128. Figure 1 should make this clear.

By adding up the values of all the plotted pixels in a row we arrive at a single number that represents the pattern of pixels, or the bit pattern.

If you look at the top row of the diagram, a pixel has been plotted in the 8 column and a pixel plotted in the 32 column. Adding these two together gives a value of 40 which is the numerical code that represents the pattern of pixels in this row.

Using the bit-map system any combination of eight pixels that are on or off can be given a single number value from 0 — which equals no pixels plotted — to 255 when all the pixels in a row have been plotted ($255 = 128 + 64 + 32 + 16 + 8 + 4 + 2 + 1$).

255, which in binary maths is equivalent to current being present in all eight gates, is the maximum value that can be understood by the 8 bit system, which is why if you poke a value above 255 into any address you will get an error message.

Of course in Basic we can use numbers larger than 255, but this is only because the Basic interpreter breaks larger numbers up into two or more 8 bit numbers before passing them on to the processor.

The diagram shows how the bug shape is coded into a series of 11 bit-mapped numbers which can then be incorporated into data structures

in a Basic program to be read and coded into the area of memory where the appropriate player shape data is held. We will look at how this can be allocated next month.

The bit-mapping process may seem a bit cumbersome. It is also difficult to visualise what the graph paper plotted shape will actually look like on the screen. Graph paper consists of squares whereas player missile positions are actually rectangles, so there is a problem in working out the correct ratio of height to width.

But take heart: the computer is designed to take the strain out of such tasks. This month's program is a player designer that works out the correct bit-mapped numbers. The designer will allow you to design and edit player shapes in such a way that you will see exactly how the shape will look when used in your player missile programs.

The designer plots a grid of dots eight wide by 30 high which represents an enlarged section of a player shape. A cursor can be moved around this grid using a joystick.

By pressing the fire button an asterisk will appear beneath the cursor and the equivalent pixel will be plotted on the player shape which has been set up to the right of the grid. Placing the cursor over an asterisk and pressing the fire button will cause

the asterisk to be erased and the equivalent pixel in the player shape will be switched off.

At the bottom of the screen is a list of the various options that are available to the operator. Key C changes the colour and brightness of the player. The system used is the same as that found in the *Acorn Reference Guide* with a 16 colour palette — 0 to 15 — and brightness range from 0 to 14.

Only even brightness numbers after the brightness. If an odd number is entered then the brightness value one below the number will be used by the system. After entering a brightness or colour value, press Return.

When satisfied with your design pressing Q gives a list of the bit-mapped numbers that represent the shape and these can then be used in programs to create the same player shape again. If you are not satisfied with the design then R erases the shape and you can start again.

Key M rotates the player around the screen using the joystick. The player missile system supports up to four players. The designer allows you to design more than one player. By placing a player next to another player a wider or taller shape can be designed.

Although the designer only allows

you to design a player up to a maximum of 20 pixels high the restriction can be overcome by placing one player directly above another. The program will work out the number codes for each shape separately but these can be easily combined in your own programs for later shapes.

A two colour player can be designed by placing players over or near each other in the way you could, for example, design a man with a pink head using one player and the rest of him a different colour using another. Multicoloured designs are possible by using all four players.

To further increase the option of multicoloured players pressing key O gives a third colour when two players overlap. This third colour is decided by the Acorn. If, for example, you overlap a green player with a blue player the resultant third colour will be orange. Experiment with this option to see other colour combinations.

Another restriction of the overlap facility is that it only works with Player 0 overlapping with Player 1 and Player 2 with Player 3. You cannot get a third colour by overlapping Player 0 with Player 2 or Player 1 with Player 3 and so on. So remember to stick to the 0 and 1 or 2

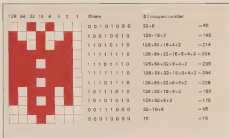


Figure 1 Bit map of a player

THIS series will be all about hardware you can make for your 486/586/SL/XE. We'll be describing devices to manage your central heating, water your house plants, control your train set or operate your burglar alarms.

We'll also look at remote key boards customised for children, disabled people or ham-fisted adults. Energy saving aids, acoustic interfaces and simple robotics.

All these are driven by software written in Basic or by simple USB-level machine code routines.

All the gadgets work through the joystick ports and this month we will explore the various signals you can put in and get out. Figure 1 shows the pin functions.

Pins 1 to 4 are the main on or off signal lines and they are normally held at +5v by internal circuitry. A signal occurs when the line is taken to



Figure 1: Joystick port pin functions

0v by some external means, like a joystick. You can plug a switching device at your own risk to port 1, and read its output by PECK STRICKS or PEEK (633).

The pattern of highs and lows on the four signal lines is interpreted as a 4-bit binary number, with 0v meaning on and +5v meaning off, so a number between 0 and 15 will be returned.

It's best if the transition from +5v to 0v is rapid so sensors which produce a slowly changing output like temperature-sensitive resistors are not really satisfactory. Devices that switch quickly – like photoresistors or keyboard switches – are suitable, so long as they can handle at least 1 milliamperes per line.

The signal lines can easily be turned into output switches. PEEK 54010 25 – PEEK 54010 386 – PEEK 54010 60 – so set up both ports for output then PEEK a number between 0 and 255 into 54010. The

Control it – with a mere wave of your hand

number will appear in binary form at port 1 – bits 0 to 3 – and port 3 – bits 4 to 7.

In output mode pins 1 to 4 are held at +5v while they are off and fall to 0v when they switch on. They can each sink 15mA at the 0v state, which is enough to control transistors, thyristors, LEDs and integrated circuit devices.

Some form of current and voltage amplification will normally be needed before these outputs can do useful work in the outside world, but with appropriate hardware you could control appliances the size of Tower Bridge. More about this next month.

By LEN GOLDING

Pin 6 is the joystick trigger line. It can be made into an output but remains effective as an input regardless of how the four signal lines are configured.

Taking this pin to 0v will change the number in address 544 from 1 to 0. This opens the way for simple feedback – a monostable device driven by pins 1 to 4 could send a signal when it had finished opening a door or drawing the curtains.

The pin could also be used as a fault line, triggering an alarm if anything went wrong with the hardware. As with the signal pins 1

milliamperes of current is required to make it operate.

Pin 7 is connected to the 'positive' side of the internal power supply, and is held constantly at +5v. It will deliver 500-milliamperes or more if you let it, but Atari specify a maximum current drain of 50mA, shared between the ports.

If you try to draw more you could end up with an expensive visit, so it's a good idea to build some form of current-limiting protection into any circuit that draws power from this pin. A 50mA push/pull fuse is used in the gadgets we will be describing.

Pin 8 is the common 0v line. It connects to all the rest of the computer circuitry and provides the 0v point for signal and trigger inputs.

Pins 9 and 9 are analog inputs designed for use with peddles. A variable resistance can be connected between either of these pins and the +5v line. The computer measures this resistance, converts it into a number between 1 (1k or less) and 255 (500k or more) and then puts the result into address 524 (pin 9) or 626 (pin 9).

These pins continue to work as inputs even when the signal lines are outputting data, so complex feedback is possible. The obvious use is for servo motors in robot arms.

Pins 1 to 4 can control motor

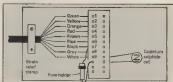


Figure 2: Analog output

Gadgets

on/off lines while variable resistors connected to pins 6 and 9 monitor the degree of rotation in two dimensions.

The analog inputs can also be used for devices which produce a slowly changing voltage. How about a photocell to tell a budget-oriented program running when it gets dark? Or sensors to control temperatures and exposure times in your dark room? Or a humidity monitor for the conservatory? Or a transducer that will react to sound? It's all possible without too much knowledge of electronics.

Here's a simple light-sensitive gadget to get you started. You will need the materials shown in the parts list. First test the extension lead using joysticks and probes in the usual way. If it is well wiring it, cut off the end you don't need and carefully strip about 1/4 in of insulation from each of the nine wires.

Score the terminal block to the board and attach the wires as in Figure 1. The colours shown are those used in the Tandy extension lead — other makes may be different.

Now fit the minimum sulphide cell on the terminal blocks shown, check that all the screw terminals are tight and then plug the gadget into port 1. Run the program.

TO READ THE CURRENT (AMPERES)

DO NUMBER 2 (ENTER DEGREE OF)

DO CODE 00

Initially the displayed number will be low — probably less than 10 — but if you now cover the cell with your hand the number will rise rapidly to 60 or more. Try this.

DO CODE 2 (ENTER DEGREE OF) DO CODE 00

and you get a light-activated tennis whistle guaranteed to delight even the youngest members of the family.

Shoepackers could use this device to make their window displays more alluring. Placemats lead to the cell and tape it inside the window so that passers-by can cover it with their hands. Then write appropriate software to generate something interesting on the TV screen when the number in 824 exceeds your

threshold value.

A similar gadget can also be used to help train hand coordination in severely disabled children who have little control over body movement. Random waving will have no effect, but careful positioning of the hand can be made to produce some form of reward.

Next month we'll explain how to use the *Star Signal* device as output switches and how you can get them to control high power appliances.

Part list

Joystick extension lead (Tandy 228-1878 or similar)
Sulphide sulphide cell — CRP12 or equivalent (Maxim type HE10L, Tandy 278-1184 or similar)
SDS4 quick blow fuse and holder (2 amp 5 amp moulded terminal block (Maxim HF018, Tandy 61-7008 or from most electronics shops)
Ribbonboard (about 8in x 12in, preferably 12mm or 16mm pitch)
Total cost around £6.60



MILES BETTER SOFTWARE

221 Cornwell Road, Chadstone, Croydon,
Surrey W21 2DD. Tel: (04542) 76696



WORD

Product	Price	Notes
WordStar	120	120
WordStar 2000	120	120
WordStar 2000 Plus	120	120
WordStar 2000 Plus	120	120
WordStar 2000 Plus	120	120
WordStar 2000 Plus	120	120
WordStar 2000 Plus	120	120
WordStar 2000 Plus	120	120
WordStar 2000 Plus	120	120
WordStar 2000 Plus	120	120

DATA

Product	Price	Notes
DataStar	120	120
DataStar 2000	120	120
DataStar 2000 Plus	120	120
DataStar 2000 Plus	120	120
DataStar 2000 Plus	120	120
DataStar 2000 Plus	120	120
DataStar 2000 Plus	120	120
DataStar 2000 Plus	120	120
DataStar 2000 Plus	120	120
DataStar 2000 Plus	120	120

GRAPHICS

Product	Price	Notes
GraphicStar	120	120
GraphicStar 2000	120	120
GraphicStar 2000 Plus	120	120
GraphicStar 2000 Plus	120	120
GraphicStar 2000 Plus	120	120
GraphicStar 2000 Plus	120	120
GraphicStar 2000 Plus	120	120
GraphicStar 2000 Plus	120	120
GraphicStar 2000 Plus	120	120
GraphicStar 2000 Plus	120	120

SPREADSHEET

Product	Price	Notes
SpreadStar	120	120
SpreadStar 2000	120	120
SpreadStar 2000 Plus	120	120
SpreadStar 2000 Plus	120	120
SpreadStar 2000 Plus	120	120
SpreadStar 2000 Plus	120	120
SpreadStar 2000 Plus	120	120
SpreadStar 2000 Plus	120	120
SpreadStar 2000 Plus	120	120
SpreadStar 2000 Plus	120	120

UTILITY

Product	Price	Notes
UtilityStar	120	120
UtilityStar 2000	120	120
UtilityStar 2000 Plus	120	120
UtilityStar 2000 Plus	120	120
UtilityStar 2000 Plus	120	120
UtilityStar 2000 Plus	120	120
UtilityStar 2000 Plus	120	120
UtilityStar 2000 Plus	120	120
UtilityStar 2000 Plus	120	120
UtilityStar 2000 Plus	120	120

SYSTEMS

Product	Price	Notes
SystemStar	120	120
SystemStar 2000	120	120
SystemStar 2000 Plus	120	120
SystemStar 2000 Plus	120	120
SystemStar 2000 Plus	120	120
SystemStar 2000 Plus	120	120
SystemStar 2000 Plus	120	120
SystemStar 2000 Plus	120	120
SystemStar 2000 Plus	120	120
SystemStar 2000 Plus	120	120

BOOKS

Product	Price	Notes
BookStar	120	120
BookStar 2000	120	120
BookStar 2000 Plus	120	120
BookStar 2000 Plus	120	120
BookStar 2000 Plus	120	120
BookStar 2000 Plus	120	120
BookStar 2000 Plus	120	120
BookStar 2000 Plus	120	120
BookStar 2000 Plus	120	120
BookStar 2000 Plus	120	120

PERIPHERALS

Product	Price	Notes
PeriStar	120	120
PeriStar 2000	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120

SOFTWARE

Product	Price	Notes
StarStar	120	120
StarStar 2000	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120

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BookStar	120	120
BookStar 2000	120	120
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BookStar 2000 Plus	120	120
BookStar 2000 Plus	120	120
BookStar 2000 Plus	120	120

PERIPHERALS

Product	Price	Notes
PeriStar	120	120
PeriStar 2000	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120

SOFTWARE

Product	Price	Notes
StarStar	120	120
StarStar 2000	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120

BOOKS

Product	Price	Notes
BookStar	120	120
BookStar 2000	120	120
BookStar 2000 Plus	120	120
BookStar 2000 Plus	120	120
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BookStar 2000 Plus	120	120
BookStar 2000 Plus	120	120
BookStar 2000 Plus	120	120
BookStar 2000 Plus	120	120
BookStar 2000 Plus	120	120

PERIPHERALS

Product	Price	Notes
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PeriStar 2000	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120
PeriStar 2000 Plus	120	120
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PeriStar 2000 Plus	120	120

SOFTWARE

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StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120
StarStar 2000 Plus	120	120
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StarStar 2000 Plus	120	120
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StarStar 2000 Plus	120	120

BOOKS

Product	Price	Notes
BookStar	120	120
BookStar 2000	120	120
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BookStar 2000 Plus	120	120
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In this final part of the compiler series I'll give those commands which the compiler provides but which have no direct equivalent in Atari Basic.

Firstly let me introduce the concept of a named procedure. These are like subroutines, but they differ from them in the fact that each named procedure can have its own local variables, and that a named procedure can surprisingly have a name. To handle named procedures the Compiler Basic has three new keywords — DEFPROC, VAR, and ENDPROC.

Using these keywords let us define a named procedure called DELAY which loops around doing nothing for a short time. We could use a FOR NEXT loop to provide the delay, say FOR N (=1) TO 1000. Here's a possible solution:

```
DEF PROC DELAY
  LOCAL VAR N
  FOR N (=1) TO 1000: NEXT N
END PROC
```

Note the use of VAR N in line 2040 which declares N to be a local variable. In effect this means that the procedure DELAY has its own private variable called N which no one else may use. Another way of looking at it is that if any other procedure or program is using N for some purpose then calling procedure DELAY will not cause N to be corrupted. An example will make this clear:

```
DEF N=1: FOR N TO 100
  DEL PROC DELAY
  NEXT N
```

PROC is similar to GOSUB — it just causes DELAY to be executed. Notice that this piece of code uses N for its loop counter, as does DELAY. However DELAY uses its own private variable called N and this is quite separate from the variable used in lines 1000 to 1000. The compiler will quite happily keep track of the two variables even though you might expect it to become confused.

This powerful feature of the compiler allows you to develop self-contained procedures with their own variables. You can thus safely use these in your programs without having to worry about when variables you used and whether or not they clash with the variables in your current program — which is more than likely with variable names just one letter long. Programming in small packages like this is sometimes called structured programming.

Another construct which lends

itself to structured programming is the REPEAT...UNTIL loop. This allows you to repeat a sequence of statements until some condition becomes true. For example:

ROMAN PROC SONGS (ENTRY, P)

This will execute the procedure GOSOMETHING repeatedly until F is set equal to 1. It is a cleaner way to write the loop than using IF...THEN GOTO.

And now on to what is possibly the most powerful feature of the compiler — the keywords which deal with timed interrupts. These are ENTRY, AFTER, ENTRY and EXIT. The INTERRUPT command is a little like GOSUB. Here is an example of it being used:

ENTER ROUTINE AFTER 10

What this means is enter the piece of code called routine but wait until after 10 fifths (50ths of a second) have elapsed. While the program is waiting for the 10 fifths to elapse it simply continues executing the statements in your program. Once the time limit is up the program stops whatever it is doing and enters the routine which you have specified.

Once the routine has terminated to completion, the program resumes executing where it left off. You may be asking yourself what the point of it is, but I can assure you that it is extremely useful — how does inter-night-deep music in perfect tempo grab you?

Before I show you how you might go about that here's how you set up an entry routine, as I said them. You simply bracket the code to be entered with the keywords ENTRY and EXIT as follows:

**1000 ENTRY ROUTINE PROC
SONG (ENTRY, EXIT)**

Of course you don't have to call your ENTRY routine by the name ROUTINE; any name will do.

Program 1 provides a procedure called SET UP MUSIC which starts the music playing when you execute PROC SET UP MUSIC. The DATA statements in lines 8080 to 8110 are the data for the music. These are titles of items — pitch and duration.

There are 12 notes in the example data list, but you can have as many as you want. The numbers were chosen at random so I doubt if it sounds that good. Note that the ENTRY routine sets up variables P and D and also

BASIC COMPI LER

Continued
**FRANK
D'OWYEN**
author

```

1000 DEFEND GET OF MUSIC/NOISE MUSIC LIST
1010 ENTER MUSIC: AFTER :
1020 ENCODE
1030 ENTRY MUSIC
1040 FOR I=1 TO THEN RETURN MUSIC LIST/00TH DATA END
1050 DATA 0,1,0,0
1060 NEXT I/ENTER 0
1070 EXIT
1080 LABEL MUSIC LIST
1090 DATA 0,3,4,5,6,7,8,1
1100 DATA 1,10,11,12,13,3
1110 DATA 14,15,16,17,18,19,1
1120 DATA 0/END END OF LIST

```

Program 1: Music store

requires the exclusive use of the READ DATA mechanism so the main program mustn't use the READ or RESTORE keywords.

Note also that line 1000 uses AFTER without an ENTER keyword — this is perfectly valid and simply means Call me again after 1/500th of a second. It is a fairly simple matter to change the program so that it deals with all four sound channels and/or the direction and volume parameters.

If you try to bear in mind that you can't have very much code in between the ENTRY and EXIT keywords. This is because the time available for an ENTRY routine to execute in is very limited. For this reason you should keep your routines as short as possible — exactly how short is a matter of trial and error.

There are still a few computer commands I haven't dealt with. These are ZERO, INC, DEC, BASIC CODE, ENCODE and a special version of GET. ZERO simply sets variables to be equal to zero. ZERO A,B,C for example is just a shorthand for A=0 B=0 C=0.

It will also execute quicker than the assignments. INC and DEC are similar to ZERO. They increment and decrement variables respectively. INC A,B,C is equivalent to A=A+1, B=B+1, C=C+1. Similarly DEC A,B,C is the same as A=A-1, B=B-1, C=C-1.

The command GET may be used to read a character from the keyboard. GET A will wait for a key to be pressed and will set K equal to the ASCII code of the key being pressed.

The command BASIC may be used to return your USB function —

remember compiler programs and up as USB functions — to Basic. You can use the keyword on its own or follow it with an expression.

BASIC 2 for example will cause the value 2 to be returned as the answer given by the USB function. You can have more complex expressions too, such as BASIC X/255 which will return the hi-byte of X to Alan Basic.

While we're on the subject of the USB function you may have been

wondering what becomes of the USB function's arguments when the function is executed. The answer is that they are slotted into the computer's variables A to Z as follows:

- A will equal the number of arguments (0 if there were none)
- B will equal the first argument if any
- C will equal the second argument, if any and so on with Z equalling the 26th argument if any!

So if your compiled program is called with X=USB(14330 1,3,3) you will find that A will equal 3, B will equal 1, C will equal 3 and D will equal 3. You can ignore this or you can check A to see if there have been any arguments, and give an error message or process the arguments as appropriate.

Whatever you do, there is no danger of the arguments being left on the stack and crashing the computer — the compiler looks after the stack. See Programs 11 and 12 for examples of compiler programs which process arguments.

The only keywords left are CODE and ENCODE. These allow you to

```

1000 IF A=0 THEN PRINT DATA END/1: REM NO ARGUMENTS
1010 PRINT END/1
1020 PRINT NO/0/1
1030 BASIC B/255: REM RETURN HI-BYTE TO BASIC
1040 PRINT/END/1
1050 FOR I=0
1060 B=14400+A: REM BASE OF ROM CHARACTER SET
1070 FOR J=0 TO B/(END/1-1): B=B/16: INC B: INC B: REM COPY TO ROM
1080 ENCODE
1090 DEFEND NO/1
1100 FOR I=0,B,A
1110 ENCODE NO/0/1
1120 NO/0/1/END/0: REM READ CODE OF CHARACTER TO NO/1/1
1130 IF C=0 THEN THEN
1140 B=C+END/1-1: FOR I=0 TO B/(END/1-1): B=B/16: INC B: REM READ/END/1/1
1150 END/1/1
1160 UNTIL C=0
1170 ENCODE
1180 DATA 0
1190 DEFEND ENCODE
1200 PRINT 255/PRINT "CHARACTER SET/END - NO ARGUMENTS"/PRINT
1210 BASIC 1540: REM RETURN OLD CHARACTER SET HI-BYTE
1220 ENCODE: REM NOT REALLY NECESSARY!

```

Program 2: On set type is ROM programs as they use too much memory in a 16K machine

assembled assembly language in your compiled programs. The only restrictions are that you must leave the Y register empty to use when you finish and that each instruction must be on its own line. Here is an example:

```
1000 STOPPED WORKING
1010 CODE
1020 NOP
1030 NOP
1040 ENDCODE
1050 ENDPROC
```

Leave the spacing of these lines — two spaces before the assembler instructions and one before CODE and ENDCODE. You should follow the syntax. You may put anything between the keywords CODE and ENDCODE which the assembler recognizes — you are effectively talking directly to the assembler without the compiler's intervention until it spots the keyword ENDCODE.

Well, that's it. By now you should have a good idea of what can and cannot be done with the compiler. Let me leave you with two example programs. Program 11 is a routine to redefine the character set. It takes one argument, the address to which the character set is to be moved — this should be a pointer to free space of 256 bytes.

You also call the routine with X=USR14336 CHBASE, where CHBASE is the address where you want the character set. X defines the character set. X defines the character set. X defines the character set. X defines the character set. X defines the character set.

The whole process — copying the ROM set and poking the bytes for the new character definitions — takes about 1/10th of a second. Compare this with the usual please wait message while an Atari Basic program redefines the character set.

Program 12 is an alarm clock routine. It takes one argument, the number of jiffies which you want to sleep. After this number of jiffies has elapsed you will hear a beeping sound and the message "Wakey Wakey!" will be displayed on the screen. Although just a toy program, really it does demonstrate the ability of RENTRY routines to work concurrently with Atari Basic.

To call the routine try X=USR14336 1000. The computer

will reply READY. You can carry on typing but after 1000 jiffies — about 30 seconds — the fun begins.

One final program. Remember I said that PRINT cannot display a number on the screen but that you could write a routine to do it? Here it is presented as assembled procedure. It will display the contents of the variable N on the screen. To print an expression just set N equal to the expression and call PROC PRINT N.

```
1000 DEFPROC PRINT N
1010 FOR C,N,0,255
1020 CODE C
1030 D=CODE C
1040 RPRINT
1050 CODE C=N+1;D=N+1
1060 IF D=N THEN D=0
1070 IF C=255 THEN PRINT C=D;N=D
1080 UNTIL D=0
1090 ENDPROC
```

```
1000 CODE 1: REM SET TIMER TO CODE
1010 ENTER TIMER AFTER 1: REM SET TIMER ROUTINE AGAIN
1020 PROC 1: REM BACK TO TIMER
```

```
1030 ENTER TIMER
1040 SET N: REM COUNT N DOWN TO ZERO IS IF THE ARGUMENT GIVEN BY THE USER
1050 IF N=0 THEN ENTER ALARM ENTER: REM IF TIME UP THEN ALARM SOUND
1060 AFTER 1: REM CALL TO ALARM AFTER 1 JIFFY
1070 UNTIL: REM REPEAT UNTILROUTER PROGRAM
```

```
1080 ENTER ALARM
1090 D=CODE N: D=CODE N: REM SET N
1100 PROC PRINT N: REM DISPLAY MESSAGE
1110 CODE N=0;D=N: REM SET N
1120 ENTER UNTIL AFTER 1: REM CALL TO UNTIL TO STOP AFTER 10 JIFFY
1130 UNTIL
1140 UNTIL
```

```
1150 ENTER SLEEP
1160 CODE N,N,N: REM SET SLEEP CHANNEL N
1170 D=CODE N: REM SET SLEEP CHANNEL N
1180 PROC PRINT N: REM ALARM OUT MESSAGE
1190 ENTER ALARM AFTER 1: REM FLASH MESSAGE AGAIN AFTER 10 JIFFY
1200 UNTIL
```

```
1210 DEFPROC PRINT N
1220 FOR C,N,0,255
1230 D=CODE C
1240 D=CODE C
1250 D=CODE C
1260 RPRINT
1270 IF D=N THEN D=0
1280 IF C=255 THEN PRINT C=D;N=D
1290 UNTIL D=0
1300 LABEL OVERFLOW
1310 ENDPROC
```

```
1320 DEFPROC CONVERT C
1330 IF C=0 THEN D=C+4+CODE CODE CODE
1340 IF C=1 THEN D=C+2 CODE CODE
1350 LABEL DONE
1360 ENDPROC
```

Program 12 Alarm clock. Alarm clock 1000 for Atari 2600.

Compiler Library for the XL and XE

THERE was a small omission in the machine code Compiler Library listing in the April issue. But simply it will not function correctly if you have an XL or XE computer, although it works fine on the old 4008/808 machines.

To correct the program so that it will work on both types of machine code in your Assembler/Editor cartridge and ENTER the original program from tape or disc.

Now add the new lines (right) and LIST it back on to your tape or disc. Lines 3 and 10 remove the references to the old EOUTCH and GET routines, the whole lines 310 to 325 allow the program to find out which sort of computer it is running on, in order to jump to the relevant EOUTCH or GET routines.

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AFTER all the excitement of the *Atari Show* I seem to have a brief lull between games being released and arriving for review, so I give me a chance to catch up with my reading and to look at an older game from the Infocom Worlds.

First out of the bag is Philip Turner playing the excellent *Dungeon Adventures* from Level 9. By the way I hear that the whole *Dungeon* trilogy is to be released soon — good news for anyone wanting to get into adventuring in a Colossal way.

Despite being called *Brillig the Brilliant* — fantasy will get you part of the way — I am loathe to solve a lot of problems, so often the solution to one will lead on to others without further help being required.

So Philip to get past this area you need to turn deaf ears to her call. To do that arm yourself with some seeds that may make your ears go a bit poppy.

Also needing trouble with Level 9 is Michael Syme from *One* who is playing *Red Moon*. Among other things he is being blinded by the flashing lights. To stop these dazzling you need to think like a mouse.

They use something round and dark to get rid of the things they don't want, so drop it there. Also if you see April's glitch column you may know how to swim and breathe underwater, but it is easier than you think. Another question about *Red Moon*

Dungeon trilogy is on its way

comes from Gofin Brunt of *Another* team who asks why the keyboard looks up in mid-game and he has to switch off and reload. Any ideas failed? Colin says he is going to send the Zapping spell at his computer if it happens again.

Richard Barker of *Gavarn* is one of several readers stuck in *The Pay-off* from *Atari*/Bigrade. Mavis send the love for the dog Richard! He wants something far more juicy, so why not spin it up for him a little and let him

By Brillig

make good use of the kennel!

As for the patients, you need to have a good feel for what you are looking for, but the clerk should help you get the right combination.

Duncan Hubbard was smashed on the nose when he attempted to climb the fence. By whom he asks? The fence of course Duncan — oh that sort of fence. Well it is an almost deserted car-park.

Last of this month's *Help* bench goes to *Steven Brillig* of *Chatter* who is stuck in *Morden's Quest*. She wants to get past the pygmy and the carnivorous plant.

To get past the first you need some puff and a tube with thorns and bones to feed it.

Once you have done that guess what you need for the second. As I said earlier one solution often opens

Glitches of the Month:

Vic Haselwede has finally finished *The Pay-Off* and is now looking on adventures. He found an interesting glitch in the game and wins this month's T-shirt.

Consistent to get into the vault after a good deal of drilling. Vic went hunting for things to help him get in.

After transporting the entire contents of New Jersey to the

bank he found the correct item near the start of the game — but it's also the way — but on arriving at the bank found that his handiwork had been required.

Someone got a nice lot of weekend overtime to do it, but fortunately for Vic they had left the tools lying around and he finished the game.

A medium size T-shirt for you Vic, so you forget to state your size. If this is too small for you pass it on to your wife for the valuable hints she gave you.

up ideas for solving other problems.

Now a plan for assistance for two perfect adventures playing a game I know not Synsoft's *Questmode Drive* and *Joe* are going bananas trying to get the second lot of jewels back to their spiritual home from the evil tower.

If anyone can help them send the answer to me by first class carrier pigeon and I will pass on the solution. Don't give up *Drive* and *Joe* - we'll save you yet.

As magic starts to be the twenty charms for adventures I have reviewed *Incognito* are released. *Spellbreaker* The third of the *Enchanter* trilogy went me something back to the original game for a play.

You play an inexperienced (in character) sent to combat the origin of the evil *Knoll* whose powers hang in a castle to the east.

Armed with only a few weak spells you are dispatched by *Balboa* the veterinarian to do your best. The



most charitable thing that you can say about *Balboa* is that he does revive you each time you get killed.

Like any sensible person sent to deal with evil in the east I readily set out west, only to be caught by the series of signs telling me why I was doing just that.

Aghast I slunk back through the sinister deserted castle village to attend my gruesome fate and gruesome it was. I was impressed and then sacrificed as a bloody altar, only to be revived and returned.

The game provides cool and the

oppressive feeling of being speed on. It is an excellent example of how to transport you to another time and place and give you a real sense of being there.

The score facility is a boon to remember the complicated spell names and the standard of prose never falls below superb. If you want to let a warrior's aggression look no further than *Spellbreaker*.

Next month I shall look at the work of another well known adventure author, *Jim Peckson*, but until then keep making those maps.

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CAN you give me some guidance on how to get more than one DLI on the screen at once? I never even knew what an interrupt was before I read Mike Weaver's article in the September April User.

A few months ago I ordered a Panasonic D Video card/bridge from Steve Shaw. Mike it plugged in I ensured it was a C ROM by MidRange location 43234. Now returned 3234 — a C ROM that my BIOS still

continued to look up. I am quite frustrated as to what I do next. If someone could help me I'd owe my publisher. — David Manders, Pittsburgh

■ To use multiple DLIs simply use more mode lines with the 128 added to the display line number.

Each interrupt will go to the same address to transfer but you could then use a small number of lines to work out how many lines it has been up and so what to do next.

Alternatively, locate a S4233 ROM/UNIT will tell you how many lines for each the screen the display is at any given time — then you could work out where the interrupt had happened.

You will almost certainly find that the problems you are experiencing with Basic are more to do hardware than that in the bugs in Basic or Basic.

Try taking the machine back to the dealer and explaining the situation. Otherwise we recommend a machine day where you go with your mail.

Protocol standard

I HOPE if you or one of your readers could help me I need to transfer data from an Atari 8000 to an IBM PC. To do this, I require two communication programs one for the Atari called AmPro and one for the IBM called PC Link 40.

I have PC Link but so far I have been unable to locate AmPro and the instructions that go with it.

I would be most grateful for

MULTIPLE DLIs -AND GOLDFISH IN DIRE DANGER

any advice you can give me. — Leslie Alexander, Haslemere, Surrey

■ AmPro is a protocol standard not a program. Many commercial packages for the 8000 give you either AmPro or the other two. However for transferring data files.

Try Hayes Pak as many of the public domain terminal programs available from user groups.

If you do not have the 850 interface module for RS-232 you could do a lot worse than getting Miracle Technology's Octalizer cable and terminal software package.

File and dilemma

AS A user of an Atari 8000 and 1050 disk drive I have come across a problem for which I can find no answer within an Atari User or my user manuals.

I am experimenting with the commands to open channels to the disk drive in order to write data in a stored file — OPEN #1:0:0 TO CHANNEL 0 to write data to the file and OPEN #1:0:0 TO CHANNEL 0 to read from the file within a program.

I have succeeded in writing a program to give answers to ask a user to open a file called GOLDFISH with various unique details and so on and to close details.

My problem is coming to display the next data. I can get the program to read and display the data from the file on comp OPEN #1:0:0 TO CHANNEL 0 which is all OK, but as soon as the end of the file is reached all other displaying on the disc I get error code 128

(program used to read data after getting end of file).

Is there any recognized statement that tells the program that "at the file end do something."

I feel sure that there must be a standard at end of file where which I do not know about, can you please help me out? — J. J. Maki, Montreal, Saskatchewan

■ Other than using a standard terminator such as End as you have said, you could have used the following line

```
IN TRAP 1000:00
GOTO 1100:00 IF
IN TRAP 0000
```

to send the program to a new line where the error occurs. You could then check PEEK(100) to find the error number.

If it is 128 (end of file) you could do whatever you need to in that case. Otherwise, you should handle the error in whatever way you feel appropriate, or halt with some form of formatted error has occurred message.

The Goldfish program seemed a bit to fall generally with a rough linked with a next TRAP to handle any errors in the file.

Bring on Bratuccas

THANKS for your response. At last the definitive answer for the long forgotten Atari users.

The ST software page was appreciated, but when I happened to discover by experience a game with an 8000 version was crying out to be written!

Something you might like to consider would be creating Atari article games from

time to time. Some time ago now I had the pleasure of playing Mike Maddams at Bournemouth and what an experience that was.

Played with a hand ball back into the machine, it's a game I can recommend to all Atari fans.

For those that ever I have several years of the Gold creating money as target machines as please see anyone heard of a similar program for Atari users? — Geoff Padburn, Milton Keynes

■ The Adventure When by Carol Winter — if you can find one!

No great saving . . .

I OWN an 8000 and have recently obtained a CIO 4000 controller module which seems to work perfectly except for two things.

The command GOTO 000 which saves object code does not appear to be operating properly.

The command GOTO 000 appears to work properly however when I go to load the saved object code from Basic, which according to page 43 of the manual it should do, the load routine crashes and the program is halted.

I would be obliged if you could give me any advice on the above and also tell me if the particular controller module is fully compatible with the 8000? — Dennis S Smith, Andover, Lancashire

■ Your problems are all related to the fact that neither Atari Basic nor the cassette system fully support the normal binary load format of an object file.

For this reason you just use the Binary Load option on the disc menu. For cassette users since Basic will not load a binary load file the format of a binary file is as follows: First 3 bytes: BFF BFF BFF

Next 3 bytes: First Address

the 1200XL had a very poor reputation — P J Nixon, Stafford, Beds.

■ The 1200XL was a forerunner to the 800XL and was never released in the UK. It had a very short life of only a few months in the States and is something of a collectors item these days.

Agat, from the sales here, can buy a lot of other minor details. It was simply an 800XL with no link in Basic. This came in a cartridge as on the old 400/800 machines.

Costly button

FROM correspondent Mr Ward write about the cost of replacing the Play button on his 1010 recorder. My reader has suffered the same bad luck and was also under-estimated, but unfortunately his dual cassette had almost died.

I was reluctant following previous experience to make any approach to Alan UK so will help you the answer.

Since I had never used the Pascal button and assumed never likely to do so, I decided to make an exchange.

As an inexperienced man with nothing my way I managed to complete the job successfully in about an hour. I realise I could do it several days later in 10 minutes and it seems to me that someone who charges £20 for such a job must be cheating.

The job is quite straightforward — simply turn the recorder over and remove the four screws retaining access. Carefully open off the plastic cover which is partially held by concealed plastic clips.

The buttons hinge on a common rail which pivots to slide on over off the clips. Then push the rest out of its housing sufficiently to allow removal of the buttons one by one — take care not to lose the return springs associated with each button.

Replace the button leaving the Pascal one — or save one if you are lucky — in the spare position, and finally

reassemble the machine — R T. Gohens, Canterbury, Norfolk.

Look to your rights

LIKE F. Ward in the March issue of *Making the Play button* of my 1010 Alter recorder having discontinued while I thought of its 12 month guarantee.

I contacted my local Alan service agents who stated that they no longer carry out repairs under warranty — their maximum charge is £20 plus VAT — and I was advised to purchase a new £211 recorder.

However, I then contacted Alan's new policy that repairs should replace faulty items up to 30 days from purchase and after that the owner should be sent to the nearest repair depot at Slough. But Alan's representative's handling complaints that repairs had been taking between three and six months.

Nevertheless, I sent my 1010 to Alan at Slough in January and it was returned to me repaired and completed fully. (I had written an interesting story of the repair).

The moral of the story — wait until your rights under the 30 day warranty from your retailer, and after this time — and up to 12 months — even the store direct to Alan at Slough.

Don't go to any registered Alan service agents until after 12 months have elapsed — even then you may be told that the charge will be anything between £20 per unit and £2 per unit of a new one — Norman Williamson, Sutton, Surrey.

Screen dump modified

I HAVE made two modifications to the 1010 screen dump in the January issue. I have changed the colour register in the colours. It is a poor colour, the printer goes through a gamut of blue and

which is not needed along nothing.

My intention when you to take the screen dump is not used.

And here 101 to 400 and 401 to 800.

The second modification moves the job and page number by putting the value and then increments into a string.

Change lines 900 and 960. Here change lines 910, 910, 920, 940, 950, 960, 970 and 980 — Brian Wright, Hull, N. Humberston.

100	PRINT "ALAN UK"	110	PRINT "ALAN UK"
120	PRINT "ALAN UK"	130	PRINT "ALAN UK"
140	PRINT "ALAN UK"	150	PRINT "ALAN UK"
160	PRINT "ALAN UK"	170	PRINT "ALAN UK"
180	PRINT "ALAN UK"	190	PRINT "ALAN UK"
200	PRINT "ALAN UK"	210	PRINT "ALAN UK"
220	PRINT "ALAN UK"	230	PRINT "ALAN UK"
240	PRINT "ALAN UK"	250	PRINT "ALAN UK"
260	PRINT "ALAN UK"	270	PRINT "ALAN UK"
280	PRINT "ALAN UK"	290	PRINT "ALAN UK"
300	PRINT "ALAN UK"	310	PRINT "ALAN UK"
320	PRINT "ALAN UK"	330	PRINT "ALAN UK"
340	PRINT "ALAN UK"	350	PRINT "ALAN UK"
360	PRINT "ALAN UK"	370	PRINT "ALAN UK"
380	PRINT "ALAN UK"	390	PRINT "ALAN UK"
400	PRINT "ALAN UK"	410	PRINT "ALAN UK"
420	PRINT "ALAN UK"	430	PRINT "ALAN UK"
440	PRINT "ALAN UK"	450	PRINT "ALAN UK"
460	PRINT "ALAN UK"	470	PRINT "ALAN UK"
480	PRINT "ALAN UK"	490	PRINT "ALAN UK"
500	PRINT "ALAN UK"	510	PRINT "ALAN UK"
520	PRINT "ALAN UK"	530	PRINT "ALAN UK"
540	PRINT "ALAN UK"	550	PRINT "ALAN UK"
560	PRINT "ALAN UK"	570	PRINT "ALAN UK"
580	PRINT "ALAN UK"	590	PRINT "ALAN UK"
600	PRINT "ALAN UK"	610	PRINT "ALAN UK"
620	PRINT "ALAN UK"	630	PRINT "ALAN UK"
640	PRINT "ALAN UK"	650	PRINT "ALAN UK"
660	PRINT "ALAN UK"	670	PRINT "ALAN UK"
680	PRINT "ALAN UK"	690	PRINT "ALAN UK"
700	PRINT "ALAN UK"	710	PRINT "ALAN UK"
720	PRINT "ALAN UK"	730	PRINT "ALAN UK"
740	PRINT "ALAN UK"	750	PRINT "ALAN UK"
760	PRINT "ALAN UK"	770	PRINT "ALAN UK"
780	PRINT "ALAN UK"	790	PRINT "ALAN UK"
800	PRINT "ALAN UK"	810	PRINT "ALAN UK"
820	PRINT "ALAN UK"	830	PRINT "ALAN UK"
840	PRINT "ALAN UK"	850	PRINT "ALAN UK"
860	PRINT "ALAN UK"	870	PRINT "ALAN UK"
880	PRINT "ALAN UK"	890	PRINT "ALAN UK"
900	PRINT "ALAN UK"	910	PRINT "ALAN UK"
920	PRINT "ALAN UK"	930	PRINT "ALAN UK"
940	PRINT "ALAN UK"	950	PRINT "ALAN UK"
960	PRINT "ALAN UK"	970	PRINT "ALAN UK"
980	PRINT "ALAN UK"	990	PRINT "ALAN UK"
1000	PRINT "ALAN UK"	1010	PRINT "ALAN UK"

Speedy service

WANT writing to magazine most people have complete no idea I would like to give someone a hearty commendation for a change.

My car has an Alan 20000 and has worked in top order since 1980 and since. We looked through the February 1981 issue of Alan UK and saw the advertisement by Computer of Longborough Lane, who were offering 10 free days with their disc drive.

I telephoned them on the morning of January 30 and arranged later when I could suggest delivery if I placed my order immediately, and was informed it would be delivered later same day. I placed the order and the great delight of my son and

myself it arrived the following morning.

Well done Computer! I know where I will be placing my orders in future — John Brad, Huddersfield.

Cassette capers

I WAS not surprised to hear about Gareth Low's economy capers. I myself did it one time in the same hour.

To help those people who use the 1010 economy recorder, I thought I would give a few tips from my experience.

When a program needs to be saved from disk, I suggest an **IMPRINT** command is contained with the printer off line. This clears the buffers of any garbage.

Also I would advise that the cassette be kept horizontal and withdrawn in 1983 on the cassette as some cassettes have long leaders which interfere with the length of the first tone.

I have found that some quality cassettes greater than £100 can save time with saving during saving in loading and then saving program.

In general, though good quality cassettes do not have this problem and I have used up to £200. I should also add that the Beta C15, identical to Gareth's letter, also causes the problems, as I now expect them.

Nevertheless, some programs still refuse to load. There are two methods which usually prove successful in correctly reloading the cassette.

The first is to advance and rewind the cassette completely several times, which removes excess loading.

The second is to play tape to tape using a high quality hi-fi and cassette. A number of these techniques reduced my cassette failure rate — Les Charlton, Walsingham, West Midlands.

■ Good advice. Don't forget you only need the **IMPRINT** on the 400/800 machines not 1010 or 1010.

Stress analysis

I HAVE stress analysis programs on an Atari 8000X. The following instructions in Atari Basic check the length and complexity of these programs:

- The maximum number of variables available in one program is two words.
- The maximum number of subroutines in one line is also restrictive.
- Can you help possibly with a short BASIC program which resolves the above limitations?

The first point arises if there is also a program and make two or three separate ones — a line concerning and doing nothing at all.

The latter point is really a nuisance in the various components of vector and matrix

maths need to be on the same line, otherwise the order in which the vector components are read into the computer causes up to the answers — J. B. Carter, *Hatfield*.

● The problem of number of variables being too small can be overcome quite easily. Probably the best way to do it would be to use just one array type variable.

Thus you only use up one name in the variable name table but you could have 10 24 or 1 000 entries in your program.

The second is harder to resolve. Devices exist, not possible by using BASIC, but it is to save the memory and by using subroutines whenever possible.

However we don't see any reason why you can't put different parts of your calculations on different lines.

Simply put any formulae into BASIC then have one line line to calculate the sum of the parts.

The program the computer uses to step along the parts of a single line is exactly the same as that used to step on a line line so simply break the problem down into smaller parts and put them on different lines.

Lighting interface

COULD you tell me how to connect an Atari 1300XT up to lights and how it turning them on and off when a certain key is pressed.

Could you also produce an article on an Atari computer controlling different things around the house, such as

opening lights on and off at certain times.

What type of software would have to be written for each of the above? — Paul Myers, *Watson, Cheshire*.

● Len Golding will be covering this in his series on graphics which begins in this issue.

International characters

WITH reference to your reply to G.D. Outwood of Aberystwyth in your December 1986 issue concerning joining the d's after I would like to add the following information.

Not only do you have to turn on the international character set with `ICTRL-26` `CTRL-40` 23 but you then have to turn off again before the end of the line with `ICTRL-26` `CTRL-40` 24. If you do not turn off again

Simpler user defined graphics

AFTER many hours of drawing user defined graphics by taking up all these numbers, I sat down and wrote a program for getting around the problem.

Put down on grid paper your 1000 — on 8x8 grid should be used.

Draw a line straight down the grid making sure that after A and B.

Write down horizontally numbers 1 to 8 by the side and read 64 as write on left hand side line code from line table.

Now copy on A8 the same as B8 then B8 23 24 etc to B8.

Now you take the line and convert on the line to convert. Do all B lines.

This method can be extended and can be worked out in the code I hope this is a useful technique. — B. Chapman, *Shaftesbury, Dorset*.



How to use converter

	Q	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
	0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
P	1	15	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
2	3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
3	4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
T	5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94
6	6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110
H	7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126
8	8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142
9	9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
A	10	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174
C	11	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190
L	12	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206
E	13	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222
F	14	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238
T	15	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254

Line table

0																
1																
2																
3																
4																
5																
6																
7																
8																
9																
A																
B																
C																
D																
E																
F																

get it at the beginning of the next line.

I have read that one could use CTRL-01 27 CTRL-02 23 into the print formatting block at the beginning of a file but certainly not with a 1027 printer that does not wait around every line starts with 0.

I have taken the liberty of including a copy of instructions for obtaining the ISC which I put on after so that I could use it later in some magazine if it is my wife and kids. If you think it is any use, perhaps you could forward it to me or for me send Mail Subscriptions - Maurice B. Pearson, 5500, Cambridge.

When I want to write an International Character, say I have to type CTRL-01 27 CTRL-02 23 to turn on the International Character Set and then CTRL-01 27 01000 is a number found in the back of the 1027 manual and yet does an international character.

I then turn off the ISC by typing CTRL-01 27 CTRL-02 24. So the 0 is written by typing CTRL-01 27 CTRL-02 23 CTRL-01 27 CTRL-02 27 CTRL-02 24 with no space between.

I do wonder by typing CTRL-01 27 CTRL-02 23 CTRL-01 27 CTRL-02 27 CTRL-02 24 with no space between.

Accent on accents

I HAVE an IBMPC which has a 1027 printer and an Altavoice also. I find when printing lengthy reports occasionally the 1027 will stop in mid-air (and stop apparently) and I find nothing there and then I pause and all I get was "Device not available".

I contacted the Help-Line and was told that if I waited 45 minutes or so, it would be back, and was told that I should wait. I said that and it would be back. They were right. The 1027 started off again. I contacted IBM and completed the job.

My last query is this. As the

1027 does not wait any more at all during the waiting time what exactly is it waiting for?

My initial query is that when using the International Character Set the 1027 printer is small with no support in the left-hand margin. This space appears to be missing German or French words. Is there any way of printing out the set without this appendage?

cordially congratulations on the magazine I have found it interesting to read and I do my warmest regards to a Magician I wish they were with me. - Bill Wiley, 1414 North Main, Norfolk.

I think we've never heard of it being used for printing before although we do know of the problem you refer to. It is fairly easy to work out the type of printer which used to get very hot when used for long periods.

The computer simply prints for a while to let the printer heat cool down. This manifested itself in the old 400000 series much more in fact when it printed the last line of text after restarting, which could be even more annoying.

As to your problem this is caused by the fact that Altavoice needs some control codes after a carriage return and can be misled by turning the International Character Set off again after each special character is printed and then on again before the next one.

Use CTRL-01 27 CTRL-02 23 to turn it on and CTRL-01 27 CTRL-02 24 to turn it back off again.

Database problem

PLEASE explain to my complete novice how to run my Home File Manager on a 1027 using the extra memory.

I have an IBMPC and used IBMPC and but 10-32 would not fit the picture back on the screen.

But after the computer was switched off and on again I tried to load the picture but it was not there.

Testing RAM

COULD you please tell me how I can test the 32K expansion RAM I have for my 80000 is faulty or does 32K + 32K add up to 40K on the 80000? I only get 40 memory blocks when using the memory test.

Many games using 40K block the Commodore Chess II G, 10 21-bit Eagle and Game Shuttle are OK. Solo Flight being the exception. Could I get this problem with Myron any from Myron?

Has anyone else had the problem with 40K add-on? - P. J. Thompson, Melbourne-Mex, Essex.

I think you go from 32K to the test test. It is calculating up 32K of memory to 40 blocks will be quite normal on the memory test.

To check the full 40K hold down Option while you switch on. This will disable Basic completely and take you straight into the test test.

You will get exactly the same result as on 80000 or a 10000 so don't worry about it. So the way Memory should work fine on your upgraded 80000, as indeed should Solo Flight.

Saving pictures

AFTER using the Canvas program from the Commodore 1027 when I produced a very good picture of which I was very proud.

I thought I could try to save the picture and that is where the problem started.

I pressed third and while the picture was still on the screen typed NEW and 10-32.

Then I saved it as type 1 pressed third and typed NEW and but 10-32 would not fit the picture back on the screen.

But after the computer was switched off and on again I tried to load the picture but it was not there.

Could you please tell me

how to save pictures like this? - Alan Park, Cambridge, Norfolk.

Although you could still save the pictures on your screen the way-only because you had not closed the memory when you did the GRAPHICS 10-32 call.

Similarly NEW and RESET do not close the graphics window. Once a GRAPHICS command can do this and by using 32 you selected a version which retains the previous picture.

Once you turned off the computer all of the memory was wiped - including your picture. Unfortunately the 1027 retained will only save your programs and other areas of memory.

The fastest way to save the picture is by a machine code routine, but a simple Basic version is as follows.

To SAVE before the picture is changed:

```

1000 REM THIS IS THE CODE TO SAVE THE PICTURE
1010 REM THIS IS THE CODE TO SAVE THE PICTURE
1020 REM THIS IS THE CODE TO SAVE THE PICTURE
1030 REM THIS IS THE CODE TO SAVE THE PICTURE
1040 REM THIS IS THE CODE TO SAVE THE PICTURE
1050 REM THIS IS THE CODE TO SAVE THE PICTURE
1060 REM THIS IS THE CODE TO SAVE THE PICTURE
1070 REM THIS IS THE CODE TO SAVE THE PICTURE
1080 REM THIS IS THE CODE TO SAVE THE PICTURE
1090 REM THIS IS THE CODE TO SAVE THE PICTURE
1100 REM THIS IS THE CODE TO SAVE THE PICTURE
1110 REM THIS IS THE CODE TO SAVE THE PICTURE
1120 REM THIS IS THE CODE TO SAVE THE PICTURE
1130 REM THIS IS THE CODE TO SAVE THE PICTURE
1140 REM THIS IS THE CODE TO SAVE THE PICTURE
1150 REM THIS IS THE CODE TO SAVE THE PICTURE
1160 REM THIS IS THE CODE TO SAVE THE PICTURE
1170 REM THIS IS THE CODE TO SAVE THE PICTURE
1180 REM THIS IS THE CODE TO SAVE THE PICTURE
1190 REM THIS IS THE CODE TO SAVE THE PICTURE
1200 REM THIS IS THE CODE TO SAVE THE PICTURE

```

To LOAD again use:

```

1000 REM THIS IS THE CODE TO LOAD THE PICTURE
1010 REM THIS IS THE CODE TO LOAD THE PICTURE
1020 REM THIS IS THE CODE TO LOAD THE PICTURE
1030 REM THIS IS THE CODE TO LOAD THE PICTURE
1040 REM THIS IS THE CODE TO LOAD THE PICTURE
1050 REM THIS IS THE CODE TO LOAD THE PICTURE
1060 REM THIS IS THE CODE TO LOAD THE PICTURE
1070 REM THIS IS THE CODE TO LOAD THE PICTURE
1080 REM THIS IS THE CODE TO LOAD THE PICTURE
1090 REM THIS IS THE CODE TO LOAD THE PICTURE
1100 REM THIS IS THE CODE TO LOAD THE PICTURE
1110 REM THIS IS THE CODE TO LOAD THE PICTURE
1120 REM THIS IS THE CODE TO LOAD THE PICTURE
1130 REM THIS IS THE CODE TO LOAD THE PICTURE
1140 REM THIS IS THE CODE TO LOAD THE PICTURE
1150 REM THIS IS THE CODE TO LOAD THE PICTURE
1160 REM THIS IS THE CODE TO LOAD THE PICTURE
1170 REM THIS IS THE CODE TO LOAD THE PICTURE
1180 REM THIS IS THE CODE TO LOAD THE PICTURE
1190 REM THIS IS THE CODE TO LOAD THE PICTURE
1200 REM THIS IS THE CODE TO LOAD THE PICTURE

```

Each of these could be added to the Canvas program if you want.

Stereo connection

HOW about stereo programs for the 1027 using more of the available memory?

As a matter of fact, 1027C programs usually output at a 1027 to show my screen? - Stewart Rowell, Overton, Wiltshire.

As to your stereo connection, many DIN plug from the Atari monitor will be of the 1027 to connect.

*Take part in our wide-ranging Reader Survey,
help to decide the kind of features you'll be
reading in future issues of
Atari User, and . . .*

Win yourself the revolutionary

PSION ORGANISER

ONE of the reasons for the outstanding success of *Atari User* has been our determination to reflect, as far as we possibly can, the interests of our readers. We do this by careful study of the letters that pour into our editorial office every day, and by talking to the many thousands of readers who visited us at the Atari show.

Now, as we plan the features that will entertain, amuse and intrigue you during the rest of 1986 – and hopefully stimulate to make even more use of your Atari computer – we feel we need to take the pulse of the whole of our readership. To find out the kind of equipment you use now, and are considering buying in the future. To discover where your interests lie – and the subjects you would most like to read about in the pages of *Atari User*.

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To encourage you, we've some excellent prizes – the brand new Psion Organiser II, and two luxury binders and desk covers for the winners up.

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II

*Actual size when closed
167x107x17mm*



THE handheld Psion Organiser was a worldwide success when it was released two years ago. Now Psion have announced the Organiser II equipped with the latest CMOS technology.

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☐ 41-50 ☐ 51-60 ☐ Over 60

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☐ Every issue ☐ 1 in 3
☐ 1 in 6 ☐ Less regularly

If you play games, which of the following types do you enjoy most?

☐ Action
☐ Strategy/leg chess/ draughts
☐ Adventure
☐ Simulation

Which, if any, of the following consoles do you own?

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☐ VIC2000 ☐ Voyager
☐ VIC3000 VSE
☐ Other

Which of the following hard discs do you own?

☐ 500/100 ☐ 1000/1000
☐ 1200/10

If you own a printer, it is

☐ Dot Matrix ☐ Laser
☐ Thermal ☐ Other
☐ Or hybrid

Please state manufacturer

ATARI 1024

If you have a disc drive, it is

☐ 5 1/4 ☐ 5 1/8
☐ Other

Which pieces of hardware are you likely to buy over the next 6 months?

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☐ disc drive ☐ MIDI interface
☐ monitor ☐ plotter
☐ modem ☐ speech
☐ external recorder ☐ other

Which of the items do you intend to buy eventually?

How do you rate your knowledge of basic programming?

☐ None ☐ Experienced
☐ Intermediate ☐ Don't program

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☐ Computers ☐ G & YG
☐ Page 8 ☐ other

Which article, or series of articles, would you like Atari User to contain in forthcoming issues?

Please give any general comments or notes on the magazine/contents?

Finally, by writing one number on each line, could you indicate your level of interest in the following within (1 lowest - 5 highest)

	1	2	3	4	5	6	7	8	9
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Beginner's Basic	1	2	3	4	5	6	7	8	9
Beginner's 6502	1	2	3	4	5	6	7	8	9
Games Review	1	2	3	4	5	6	7	8	9
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Adventure Review	1	2	3	4	5	6	7	8	9
Software Review	1	2	3	4	5	6	7	8	9
Hardware Review	1	2	3	4	5	6	7	8	9
Reviews	1	2	3	4	5	6	7	8	9
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Post to:
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Read 4-10 computer letters

Which computer do you own?

☐ 400 ☐ 1300XL
☐ 800 ☐ 1300XL
☐ 1000 ☐ 1300XL
☐ other **800XL**

What memory capacity has your computer?

1

Do you own an RGB interface?

☐ Yes ☐ No

Which of the following do you use?

☐ Atari Writer ☐ Assembly Editor
☐ Pascal ☐ Modem
☐ Homograph ☐ Action 1
☐ Supergraph ☐ Visual
☐ Logo ☐ Success
☐ Think XL200 ☐ Swift 1
☐ Microsoft Basic

Please list any other non-game product you regularly use

Speed Script

Atari ST owners

Which computer do you have?

☐ 100ST ☐ 1040ST

☐ 1020ST

Which peripherals do you own?

☐ 3 1/2 disc ☐ hard disc
☐ 1 1/4 disc ☐ printer
☐ other

Do you have 640K/128K?

☐ on disc ☐ in RAM

What kind of monitor do you use?

☐ colour ☐ monochrome
☐ monochrome

What do you mainly plan to use your ST for?

☐ work ☐ programming
☐ personal/business ☐ games
☐ other

What magazines do you read?

☐ Bits ☐ Pascal
☐ Monitor ☐ C
☐ other

List 3 software packages you regularly use

1

2

3

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Vol. 1 / No. 4

June 1986

Atari ST User



How to make
the most of
ST graphics

- Double your 520ST's memory: Two techniques reviewed
- Revealed: SOUND advice missing from the ST manual
- Use your mouse to escape from the cunning 3D maze



You ain't seen nothing yet..

MIKE COWLEY reporting

IT seems that the 1040ST is only the beginning folkie. The bellymoo surrounding the launch of the new megabyte machines had scarcely died down when rumours began to circulate of even more powerful machines waiting in the wings.

Now admittedly it is an industry where such is as rare a commodity as poetry in Dynamex, one tends to learn to wait such tales with a degree of caution.

After all, computer corporations make the maximum use of hype to keep their stock as inflated as possible. They may not actually persuade them to jump out of their skins but they keep them every the ledge as often as possible.

So what is going on? Well when it comes to finding out about new machines which have cost millions of pounds to develop, there is little point in asking the pretender — or even most senior executives for that matter.

After all, it was so often pointed out during the Second World War — (General) Talk Costs Lives in this instance the working lives of those who leak information to their masses in the media without the necessary sanction from above. So the only way you can be sure of getting to know what really is happening without sacrificing your information using the way it is to go to the top.

And what is James to Alan you can't go higher than the Third floor. In the dead of night Steve Thomas the president whom I sought out to find out if there was any substance to the reports of new machines on the pipeline.

Yes, he admitted, it's quite true. The one megabyte is just the start. The next one along will be the two megabyte — the 1040ST — then a four megabyte version.

But how much technology do people actually want?

Just as much as you can possibly give them — says Steve. It's like owning a caraboline. You may not always need that extra power but it's nice to have it there if you do.

TALKING of Steve Thomas, the Atari president confessed that he is "computer illiterate". He admits that while he knows how to build them and give them, when it comes to making them work he's an idiot.

While he sure employs the Commodore he readily admits he could not get it going with the Asteroid 64. "I simply could not use it," he says.

However, as the price of the ST the machine has proved to be a breakthrough, not only for the company, but for Steve Thomas himself.

With the ST, I just put a few buttons and it



The 1040ST sets the benchmark

works" he boasts. "Mind you, this doesn't make me much of a hard-bodid dude, my four-year-old son can use one."

A SURVEY has shown that it can cost up to \$500,000 to develop a software program for the ST. The total was dropped by Sig Hartmann, Atari's software supreme, when he visited the UK recently.

So why then with costs as high as this, I ventured to ask, did the company insist that developers pay for their machines in the first place? He saw this as a way of them demonstrating their commitment, he replied. It proved to us that they had faith in the machine and Jack Tramiel.

If we had just handed over the machines, there was no guarantee they would have got around to writing any software any way.

Hartmann went on to point out that Atari will go to considerable lengths to help developers for the ST range. Out in the States software houses are invited to send their writers along to Atari's headquarters to spend a week picking the brains of the company's experts. Unfortunately the cost of such a venture would preclude UK companies taking advantage of this, says Hartmann. Unless they want to pay their own expenses that is.

Mind you, the quality of the software being produced for Atari for the ST is still in its good third phase. But anywhere else in the world.

Hartmann and his team expect to continue working round the clock for some time to come to ensure there is a constantly expanding software base for the ST range. "I don't come up with the goods I won't be in the job for long," he says.

Just before he flew back to the USA Hartmann pledged that whatever new machines were introduced they would be compatible with the existing software range. After all, I've got enough grey hairs from this project that there is no way we'd want to start off from square one again, he said.

SOFTWARE FOR THE ATARI ST

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3D

IN 3D Maze you are trapped inside a perplexing labyrinth and must find the hidden transporter in order to escape. You see everything at eye-level and can move forward and rotate left or right.

The computer keeps track of your direction and displays your present view as well as the other possible directions you can move in. It also presents you with a map of the area you have so far covered.

It may sound a little bit as if you'd expect there is a catch. The Robot-Droids are harmless looking — they appear on the map as slightly shaded spots — but devious fellows who will track you round the maze in a concerted bid to foil your escape.

Needless to say they are not fooled by junctions dead ends and so on, and will quickly backtrack if they feel they are losing your trail.

Initially only one robot hounds you and it is easily outwitted, but progress to the second level means you have to contend with two of them and so on. Your enemies steadily become more cunning, fitting themselves with interference mechanisms so they do not appear on the map.

At first the robots only move when you move forward, but in the later stages they move even when you turn round. There are a maximum of six and all have different tendencies to their never and up all moving to the same place at any one time.

3D Maze becomes nerve-racking as you desperately search for the exit with the relentless robots closing in all the time.

At the beginning of the game you are at the top right of the maze looking South — downwards on the map. To move you move the mouse pointer over one of the large arrow icons and to



MAZE

rotate left or right the left mouse button must be clicked on.

The drawing and filling of the view is done at high speed but try not to move the mouse as it is happening because this slows the process down.

The program is written exclusively in ST Basic and uses the VIDEOSYS commands to change text types and heights. As the listing is annotated with RDM statements and uses labeling in conjunction with structural subroutine handling the program can easily be debugged.

Since the program is quite long the disk utilities on the TOS disc must be reversed to free some memory unless you use a RDM system. This is done by sliding the TOS disc write-protector and typing in Basic: NAME DESK1 ADD AS DESK1 AAA.

The program should be saved on a spare disc. Entering the program in the edit window is easier than in the command window and the RDM statements can be omitted.

MAJOR VARIABLES

NRN	Number of robots in the maze
NRN1	Number of hidden robots
NRN2	Whether robot moves slower first
NRN3	Representative direction player takes
NRN4	1-North 2-East 3-South and 4-West
NRN5	Which the maze depending on the maximum x and y total
NRN6	Player's location
NRN7	Whether lights are on or off
NRN8	Current speed score made for player

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Stephen Green's exciting arcade game for the ST

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Program: *Word for Word*

Price: £39.95

Supplier: Software Express, 87A-87B Alton Road, Road, Alton Road, Birmingham B5 7JL Tel: 021 559 3000

WORD For Word from Ray View is a good computer version of Scrabble. It can be played by up to four people or three people and the computer.

It uses the mouse for many of the commands, especially to point to the board to show where the word is placed.

Why would you buy a computer Scrabble game? Besides being a good fun game, you might wish to test your wits against the computer or to increase your vocabulary. Usually it is often difficult to find a player at your level.

Word For Word helps in all these categories and offers a better reason for buying it - you can design your own board.

The game uses the normal scrabble board with squares that double or triple the value of letters, and other that will double or triple the value of words.

There are also bonus squares that increase the value of a letter by a fixed amount. There are sample boards with different designs that can be used, as well as a board that you design yourself.

The computer plays at three levels - beginner, intermediate and advanced. The computer thinks out loud and you can see the words and the placement of the words on the board as it progresses.

At the beginner level it can be beaten easily. At intermediate it plays well and at advanced level, its play is very impressive indeed.

Just like in the board game, you can challenge your opponent about the validity of the words.

The computer has a 500 dictionary built into the system. However it cheats. Every so often in the advanced level it will throw in a bogus word.

I don't think this is an error on the part of the programmer, but a deliberate feature to keep human players on their toes.

You too can make up words, and when the computer challenges your effort, explain that you have looked up the word in a dictionary. You do this by clicking the Correct box - but it takes a pretty long time to cheat a dumb computer!

Final feature of the game is the ability to design and save your own board and letter values. It is easy to do this using the mouse.

This feature makes the game much more fun. I



always thought that it was often to have only one K and now I can regularly play with 12 Ks. This makes for a much higher scoring game.

You can also vary all the letter frequencies as well as the letter values. In the standard game you play using an tiles, but it is easy to change this to seven in tiles.

With blank squares and lots of triple words and high values for extra letters, the whole character of the game is changed.

The package comes with a comprehensive manual, but this is hardly needed as the program is so easy to use with its drop down menus.

Play is quick and exciting and uses the ST's capabilities well. The mouse is used to good advantage both in the manipulation of the letters and pointing to the spot where they should go.

Neil Gidwin



For the young in heart

Program: *Treasure Island*

Price: £39.95

Supplier: Winterton Classics

THIS adventure game based on the classic Stevenson novel is designed for the younger adventurer, say aged about 8 to 14.

It uses the 16 colour 40 column mode and all the major characters are brought to life through pictures.

The puzzles are not difficult, little humour is involved and the pace is of average quality.

My eight-year-old daughter certainly likes **Treasure Island**. The graphics are not great, but

then she says that it would disappoint her if the pictures were bigger and there would be less action on the screen.

She likes the idea of having a scene and a picture of the person to whom she is telling, and also appreciates the list of the vocabulary words needed in the scenes.

There is also a command called `Words` which lists the appropriate words for each scene.

A great deal of help is offered during the early stages of the game. It is very easy to perform the correct actions when the computer prompts you that Bane is getting thirsty and wants something to drink.

Also appreciated was the fact that there is no saving in the game, and when there is an object that is really needed later in the game, you cannot leave it as waste without picking it up.

This facility would have been useful in
Bridgman's Studio as I never thought of picking
up the floor.

When you type Save you can save at any of 10 positions. When you specify the position, you can also specify a 30 letter message to remind you next time of what was saved.

My daughter took about 45 minutes to leave the tablet and get on to the ship. She was only killed once during the first chapter of the book and it was her own fault because she couldn't

told her that there were local boats coming from the harbour and she went to investigate.

Each piece of the puzzle in retrospect was logical and assured her she got lost on the path to Bristol. But the computer helped her find her way.

She thought the music that was being played was good and appropriate. It also quieted down to let her read the text.

The next day she wanted to spend another hour on the Hispaniola. The lack of really good graphics was more bothersome now, and she concluded that the game seemed harder.

Having read the book, she knows what to do and what to expect. But this isn't a real advantage.

I would give this game a B for effort and execution. The adventure is interesting and playable. The Word Window feature helps you to get through the stories and find the treasure.

But it really hasn't used many of the ST's facilities. There is too much disc spinning during the game, even though the pictures are not full screen. The pictures could be drawn in much more detail, and the sound capabilities utilised more.

However it is a good first effort and young adventurers will enjoy it.

W. A. D. K.



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Wrote the screenplay. Also wrote about the character.
 Based upon David Williamson, an author from Britain.
 Characterization: 1994-1995

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SMART ART (16k)

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Give the artistic mouse its head

HAVING already taken a look at two of the available graphics packages for the ST, Degas and Macchrome, we shall now start to use them.

The techniques used when drawing on a computer screen are quite different from those of drawing on paper, although the similarity is increasing as the hardware improves.

I have drawn with keyboards (graphics tablets), light-pens, touch tablets and the ST mouse, and I find that the mouse is my favourite, with the touch tablet coming a close second.

The light pen would seem to be the closest thing to drawing with a pen — at the same suggestion — but holding your hand up to the monitor screen that your shoulder and makes it difficult both to control the pen and to concentrate. With the ST and mouse we are as close to the physical act of drawing as we are likely to get.

The first thing to consider when painting with your mouse is the range of colours you intend to use. At the moment the ST gives a choice of 16 colours from a palette of 612 in the lowest resolution. To make the choice you obviously need to have a good idea of what you want to draw.

Every object in the picture will need certain colours defined. It is a good idea to aim for at least three shades of each colour for shadows. To produce clearer shades of the same colour simply reduce the red, green and blue values by one until they near zero.

Always experiment, though because sometimes a little more red or blue in shadow colours can look good. Professional artists rarely use black in their paintings because they claim that it

is not found in nature and it is a dull colour anyway. Instead they add purple or red to shadows, which may seem odd but really works.

Adding blue to highlights has a similar effect. Don't forget when planning your palette that if two objects are different shades of the same colour, say for instance, then the darkest shade of one object may be useful as the lightest shade of another, thereby saving a paint job.

Another thing to bear in mind is the animation facility in Macchrome. If you intend to use the feature the sequence of colours has to be planned from square one.

Don't forget this: by using the conversion routine from the last issue you can draw with Degas and then use the Mac shade show and animation facilities. I used this animation to make the candle flicker in the demon shown last week and for the impossible waterfall.

To achieve the illusion of movement you should set aside at least three colours to cycle through to allow the eye to discern a directional motion. With just two colours movement could be in either direction and the illusion does not work. In the waterfall picture I used eight different blues to create a smooth flow which does not noticeably repeat itself.

A useful time saver in Mac is to use the line command with the right-hand mouse button. Mac then draws the line using the colours between the animation arrows. Each colour is used only once and the number of pixels it covers is calculated as an average.

I did not use the line draw routine with the waterfall since it would have given the water too regular an appearance, and I also wanted the water to appear to flow faster in the centre than it

**Kevin
Bulmer
concludes
his series
on ST
graphics
with a
look at
technique**



did at the edges. To create this effect I used each colour over more pixels in the centre of the flow than at the edges.

A useful tip to remember when planning your colour scheme is well demonstrated on the bouncing ball games now running on several macs. The ball seems to spiral pixel of the background, yet there is no perspective to the image, only colour differences.

So how does the illusion work? The spectrum, as we all know, ranges from red to blue. At the red end of the spectrum are the warm colours and at the blue end the cold colours.

On a painting warm colours always seem to be in front of cold ones and this effect is especially noticeable on most computers where with the honourable exception of the *Acad* range there are only very vivid colours to choose from. The bouncing ball stands out so well because it is bright red in front of a background of blues.

When starting a picture I use a single pixel brush and the 4-line option to block in the composition. However if there is a symmetrical object of any appreciable size I set up the mirror option and draw that first.

Once the object is drawn it can be moved into its proper position with the excellent copy or move features built into *Degas*. If you want to use mirror to draw a shape, but you simply want a single pixel centre line, put the program into slow draw mode and block copy half of the finished image one pixel wide.

One of the features I would have liked to see in *Degas* is the ability to draw an exact square. As things stand you have to judge whether you are faced with a square or a rectangle. Actually it is simple to calculate. First draw a line at 45 degrees, in other words one pixel up for each pixel across on each successive line.

Then select three, place the start point on the line and make sure that two opposing vertices of the framework also fall on the line. When the shape is drawn you will have a perfect square.

Remember that you can build up the shape away from where you want it, remove the construction lines and X-ray copy it into position. A perfect circle can be generated by simply holding down the *Alt* key as you click on the centre point.

One thing about computer graphics which tends to make them instantly recognisable is the stepping which occurs on curves or diagonal lines. The solution to this problem is simple. Place in the corner of each line a pixel of a colour approximately half-way between the background colour and the object colour.

Use the zoom function — *F1* on *Degas* — which makes it easier to do. This tricks the eye into thinking that the line is smooth. This method of tricking the eye can be used in a variety of situations including simulating a finer line than pixel width, producing diagonal lines or creating glow effects.

A nice effect which has previously been

difficult to calculate becomes fairly easy because of the way in which colours are created on the ST. Mixing between one colour and another, say red and green, is accomplished by averaging out the difference between the red, green and blue sliders.

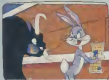
If your red were composed of seven red units, no green units and two blue units and your green consisted of one red, seven greens and no blues, a mid colour would have four reds, three greens and one blue.

This effect is useful for painting skies or sunsets. A point to remember about the sky is that it is always paler on the horizon than overhead. Look out of your window.

A more familiar way of depicting depth is a flat image than that of warm and cold colours in perspective drawing. This is too complicated to go into here in any great detail, but one useful way to work out accurate perspective in a picture is to draw the horizon, choose a vanishing point, and then use *copy* to draw the perspective lines.

Another way, which leaves less messy construction lines on your picture, is to use lines from the vanishing point to draw the perspective lines and then cancel the selection with the right hand mouse button, leaving the cursor on the calculated pixel.

The same formula can be used to calculate shadows. Choose a point on your picture to be





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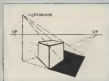


Figure 1

the light source and take this through the corners of the objects as shown, to the ground and then join up the dots – see Figure 1.

Another form of perspective is aerial perspective. If you look at a landscape stretching into the distance you'll notice that the further away an object is, the paler its colour.

The best example of this is a photograph of a mountain range poking through a veil of mist – the peaks seem to be fainter the further they are from you. What happens is that the dust in the air between the viewer and the mountains is reflecting the colour of the sky and this acts like a filter.

The result is that if the sky is light, objects in the distance are lighter, but if the sky is dark,



Figure 2

distance causes things to look darker. A perspective grid can really benefit from this technique since the lines of the grid appear narrower as the distance than the foreground.

Human anatomy is a common source of trouble for artists. It used to be said that the hardest thing in the world to draw is the human face, followed by the hands and then the body and that if you could master these things you could draw anything.

Whether that is true or not a study of anatomy is very worthwhile, but again it is too much for this article to go into. However there are a few formulae which generalise the human form and which can help.

There are seven and a half heads to a human being. The shoulders are two heads wide and the hands half of a face across – see Figure 1. The face divides into three equal parts – from the top of the forehead to the eyebrows, from the eyebrows to the end of the nose and from the nose to the chin – see Figure 3.

Don't forget that you can offload other things with your pictures once you've drawn them. I bought a copy of Colourscape in the Alan Ugar Show and when I got it home I discovered some useful features which I had not seen advertised. As well as a light synthesiser, Colourscape is also a Neo-chrome picture processor.

You can load two pictures at once into memory (one as a foreground and the other as the background), merge them together, square them to one side or to the top of the screen, reduce them to quarter size, reflect them side to side or top to bottom and define a distorted plane on which to print the picture. Your picture can then be saved out again.

A feature I really like is that Colourscape extends the Neo-chrome animation feature so you can now have two sets of rotating colours going at once, and the speeds and direction of rotation can be different for each.

I loaded up my demon picture, set up a star scroll coming out of the groin, moved the origin of the scroll into the demon's mouth and set up gravity. It then looks as if the demons' leaping can fire. This program is a terrific graphics tool as well as a great way to relax.

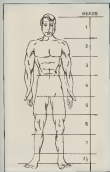


Figure 3



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AS1

THERE were times when I could have eaten the carpet, for less chawed it, when doing some C compilations recently, and for several reasons.

Firstly my disassembled TOS was an early version that bombed every half-hour or so—the crash I happen with version 10, the final one.

Secondly I only had a one double-sided drive and the TOS didn't leave room for a RAM disc of the size I needed. Even if I told hands on a ROMmed TOS I knew I would still have difficulties with the 400k+ of files that I wanted to keep on the RAM disc.

The only answer was more memory and although there are now proprietary add-on boards for the SE, I chose a way of doing this by adding an extra 512k bank of RAM which was pointed around the US micro network recently by Gert Steenberg, who included C source code for setting up a RAMdisc. It cost me £32 and there are no experiences with the memory addition.

It is scary and opening up your ST will void the guarantee unless it is done by your dealer—he foots the bill when it comes to guarantees anyway. My 520ST was three months old when I did it, but I reckon that if a fault here I surfaced on a micro in the first week you're unlikely to get away—except from old age and all micros are obsolete long before then.

Don't attempt it unless you've successfully done some soldering on that printed circuit board. Otherwise it is absolutely straightforward and should only take a couple of hours. You'll need a soldering iron fine enough to solder individual legs of an IC without making solder bridges to adjacent legs; a solder sucker for removing components from the board, a pair and a half of thin insulated hookup wire and leads 16 256k 160new DRAMs—I used NEC chips like the ones already on the ST. These RAM chips are the major cost of the modification and if you shop around you may get them for £3 a throw.

With the door locked, a clean table top to hand and the soldering iron warming up, begin by switching off the ST and removing all leads. Turn it over and use a Philips cross-headed screwdriver to remove those long screws at the back and three medium screws at the front.

Turn the ST back over and remove the top, putting it somewhere you won't step on it. It is now possible to lift the keyboard unit enough to see where it plugs into the main board—unplug it and put it somewhere safe. You can't put the plug back the wrong way so reassembly because it is keyed.

You should now be looking at a tin can which screens the main board. Remove three medium screws holding down the front of the screen and three short screws that are visible through the round holes in the top of the screen toward the back. Now lift out the whole board completely with screening, making sure that the connectors at the rear come clear of the holes in the lower half of the ST casing. This is easiest done by lifting the

Give your memory a boost



front of the board assembly and lifting it clear of the insulated pillars that stick up from the lower casing. These assemble through the oval holes in the top of the screen.

Put the board assembly on a surface where you have the soldering tools and extra components to hand.

Carefully unseat nine screen shielding legs and unsolder the remaining four, and you should now be able to lift the top and bottom screening away, leaving the main board to work on. My board said it was a revision 20, but as far as I know ST boards only changed radically with the advent of the 10400T, which has a completely different layout and socketed RAM.

From now on left and right means looking at the top of the board with the RAM lines toward you.

Take the 16 new RAM chips and bend up pins 4 and 16 on each so that they are horizontal. Snip off the excess length of these at the shoulder leaving enough pins to solder to. Lay them on one side. Locate the decoupling capacitors adjacent to each RAM chip on the ST board. These have to be temporarily removed to make access during later stages easier.

Carefully disconnect them from the board by bending their excess lead straight on the underside of the board and desoldering so that the holes are clear for later reinserting. Don't pull at the body of the capacitor or it might break—use the leads to free it. If you do break one you'll need to get 220nF decoupling capacitors of the same size to replace them.

Take each of the new RAM chips and piggyback them on to the existing chips, making sure you have the pins the right way round. It helps to make them snugger fit if you have bent the pins of the new chips inward a little to help the grip.

Use your fine soldering iron to solder each of the new RAMs to the existing ones. Check the joints on each chip as you finish because dry joints are easier to rectify now than later—a magnifying glass and a strong light helps. When all the chips are mounted and checked you can replace the capacitors.

Take the insulated hookup wire and connect pin 4 of all the new RAMs together, going right to left one at a time. Connect pin 4 of the far left RAM through the round hole in the board below and left of U19 to pin 16 on the underside of U16.

**Peter
Connors
and
Andrew
Bennett
look at
two ways
to expand
the ST**

— the ST's MMU chip. The pins on this are numbered on the top of the board so it is easy to locate pin 18 among the staggered connections on the underside.

Now connect pin 18 together on the right new RAMs on top of U46 to U32, and connect the far left pin 18 of these through the coupler hole to pin 22 of U15. Do the same for the RAMs on U30 to U16, taking a connection through pin 21 of U15.

What you have done is used the MMU's unused Bank 1 control lines for the new memory. None of the connections to the RAMs should stick out above the top of the new chips too far. If they do you stand the chance of fouling the top screen when it is replaced.

Check everything again. Are your solder joints above suspicion? Is everything back? Have you connected to the right pins on U15? If you're happy, you can either reassemble the screen and case before verifying success or you can put it on to a power source and connect up power, disc and monitor to check the modification. Either way reassembly is the reverse of assembly.

If TOS boots up correctly you're not blown anything. If it doesn't boot then switch off and check everything very carefully, especially for

solder bridges between adjacent pins. If it still won't boot then you may have capped your existing RAM.

Although my ST booted fine the first time it claimed that there weren't any extra memory there. TOS runs a check on how much memory there is on switch-on and adjusts system variables accordingly. My modified ST still had only 512k according to TOS. I checked my work and found that I had three out of 1559 dry joints. Reassembling these and rebooting booted me with a megabyte of RAM.

If after checking you can't get TOS to recognize the extra memory then you'll need something like the SIO in the Development Pack to quantify which bits of the new memory you can write to. This way you can work down which chips in the new RAM may be faulty.

To check the memory in there you can simply print the [Q] in STBasic. The result will be 512k bigger than you used to get — about 950k with TOS in use.

If you poke about in the screen memory area you'll have to add \$8000 to all your values from now on because TOS puts video RAM in the last 32k of whatever memory it finds. Have fun.

Peter Connors

The 1 mbyte upgrade

AT the recent Atari User show a company called Advanced Systems and Technologies (AST) introduced a 512k upgrade board for the 520ST. Installing this board will give 512kbytes of memory, as much as the new 1040ST.

The board measures about 2in by 4in and looks professionally constructed. It comes with a simple instruction sheet which should tell those experienced in electronics all they need to know. To install it you must first disconnect all the leads from your ST then open it up and remove its front board. To do this you must unscrew some 12 screws and undo about 15 latching.

Then one chip must be removed from its socket and placed into a socket on the AST upgrade board. The AST board is then plugged into the empty socket on the ST board. Pinners wires on an ribbon cable are then soldered to various legs of two of the ST's chips. Finally the ST can be reassembled and tested.

The whole installation process should take no more than two hours but extreme care must be taken at every stage. A mistake in the soldering stage can leave you with a dead ST and the upgrade should not be attempted if you don't feel confident enough to install the upgrade yourself. AST will do it for you.

Of course opening your ST and installing the board will invalidate your Atari guarantee included in the price of the board is a guarantee of your ST for the remainder of its first year. The

upgrade itself is guaranteed for 12 months.

With 1 mbyte of memory you will have about 950k free with the system in ROM and about 700k if your system is not on disc. This extra memory allows you to assign huge amounts of memory for RAM discs and print spoolers. A large RAM disc will speed up your everyday work. Because you can use it as you would a normal disc and then save it before you turn off or reboot the ST.

Giving over a large amount of memory for a print spooler will mean that when you print out a document you will be able to do something else with your ST while the spooler prints the document from the extra memory.

Lucky most of today's ST software has been carefully written to make use of extra memory if available. For example, with the upgrade installed Basic now has about 700k for programs and STWriter has space for about 711k of documents. Subtext 200k from these values if you have your system on disc. You should also be able to use larger databases and bigger spreadsheets with the upgrade.

The cost of the board is £99.95. This includes a 12 month guarantee, and installation if required. There are two different versions of the upgrade, one for the 520ST and one for the 520STX.

AST is also developing a 3mbyte upgrade board which will take available memory up to 3.5 mbytes. This should cost about £400.

Andrew Bennett



Q&A

SHAPE OF SOUNDS TO COME

AS you know, Atari Basic has two commands for producing sound—SOUND and WAVE. They can produce a large variety of sounds, but you may have to experiment to get the exact effect or note that you want to use in your programs.

Unfortunately, use of the Wave command has been limited by the fact that Atari missed out a set of shape diagrams—shown here in Figure 1—from page G158 of the ST's Basic manual. Each graph shows volume against time. Armed with these, you should now be able to produce all the sounds that you want.

Since late last year a three-page article has been floating around the computer clubs and bulletin boards. It tells how you can upgrade your 520ST from 512k to 1Mbytes by buying the required chips and soldering them into the ST yourself.

If you are feeling brave, read Peter Connors' article in this issue which takes you through the upgrade step by step. Although it warns about possible problems if you make a mistake while upgrading, I don't feel that it overstates them all.

Soldering the 16 new memory chips on to the back of the drive already in the ST is hard enough, but you must also contend with the slight shortcircuits that your particular ST might have. It is possible to do the upgrade correctly and still have it not work.

The memory controller (MMU) chip in some early STs could not handle 1Mbytes and thus be swapped for the latest version. Even the thickness of the wire you use in the upgrade can make a difference. All in all, DIY upgrades should be left to those who have the electronic equipment to solve any problems that may arise. If you do not fall into this category, and you still

wish to upgrade, you should strongly consider using a board such as the one from AST reviewed in this issue.

If now many of you will be considering upgrading your 520ST by adding the Gem and TOS ROM chips. Unfortunately, upgrading isn't simply a matter of inserting the new chips into their sockets. There have been many subtle changes in the area of the 520ST's circuit board near to the ROM sockets.

Each type of board requires a slightly different method for upgrading. Some require that you make or break certain links on the board. If you feel confident enough to make such alterations yourself, make sure that you get a copy of the full Atari upgrade instructions with your ROM chips. The instructions consist of about five pages of text and diagrams. If you don't feel confident enough then you should let your friendly neighbourhood dealer do the upgrade for you. Don't forget that if you do the upgrade yourself and find you have damaged the computer, then you may find that your guarantee is void.

Even when you have your system in ROM life can still be difficult. When you reset or turn on your ST the system will look for a disc in the drive. It will then load the DEBATOP (INI) file and any disk extensions that may be on the disc. If there is no disc, or the disc isn't the ST can take over 30 seconds to boot up.

If you try to boot up with your old system disc, the ST will load the old TOS or before, making it easy to believe that the ROMs don't work. The best solution to all this is to use your old system disc as your boot up disc after having first deleted the TOS (INI) file from it. Your desktop will then look exactly the same as before.

Problems, problems

FIRST laster, the month comes from Speshie Konstantinos in Greece who asks about dumping the graphics produced by his Basic programs to his printer. This can be achieved by simply pressing the Alt and Help keys together with the printer turned on. You should also use the 'pixels per line' setting in the latest Printer disk, necessary to 960.

This method of screen dumping will work from most programs. The only one that I have so far come across that does not allow this is the Megaroad game, but I'd be interested if any of you have discovered any other programs that don't work with Alt+Help.

Mr Konstantinos also wants to know if there is a good book covering the ST's operating system and in particular the Virtual Desktop Interface and the Application Environment

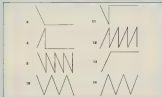


Figure 1. The diagrams missing from the ST's Basic manual.

Services. I briefly discussed both of these a few months ago, but to discover their uses more fully you might consider buying one of the books on the subject that have emerged recently. The best of these are: *Qam on the Apple II* from 1st Publishing and *The User's Guide to Qam and TOS* from Computer I books.

Jim Taylor from Sunderland asks whether it is possible to change the time and date given in the control panel to English format. The answer is that the date being displayed by Atari with the 1040ST and 1200ST machines have a revised version of the CONTROL, ACCR, which works in UK format. Simply pop into your dealer and ask for him to copy it on to your old disc.

Berry Thomson, Bighi Park, wants to know how to save the page layout form in 1st Word so that he does not have to reformat it every time he loads 1st Word. Giff tells me that when you save a document the page layout is also saved. The solution is therefore to create a blank document and save it, having first set the page layout form to your required values.

When you wish to start a new document simply load up your blank document and the layout form will already be set up as you want. Giff also tells me that the firm cannot normally answer questions over the phone. If you have a

question regarding 1st Word you must write in.

A. Poole has another problem with 1st Word. Every time he prints out a document the printer wastes paper by advancing onto sheets. The solution lies in one of two places.

Version 1.01 of 1st Word contained a bug which wasted paper in this way. This problem has been fixed in version 1.02, which is available free from your dealer. The other possible solution lies in the configuration file for your particular printer: it may contain the code for form feeding and your printer may not need a form feed. If you change this file, the printer should work from now on.

Berry Witham, of Pakenham and many others have written in with printer compatibility problems. The main problem seems to be that the printer prints a blank line between every one sent out by the ST. The answer is to turn off the auto-line feed GIP switch inside your printer. To do this you will have to refer to your printer manual.

Many of your printer problems can be solved simply by checking that all of the GIP switches are set correctly for the ST.

● That's it for another month. Next time I'll be trying again to solve more of your problems, so keep the questions rolling in.



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